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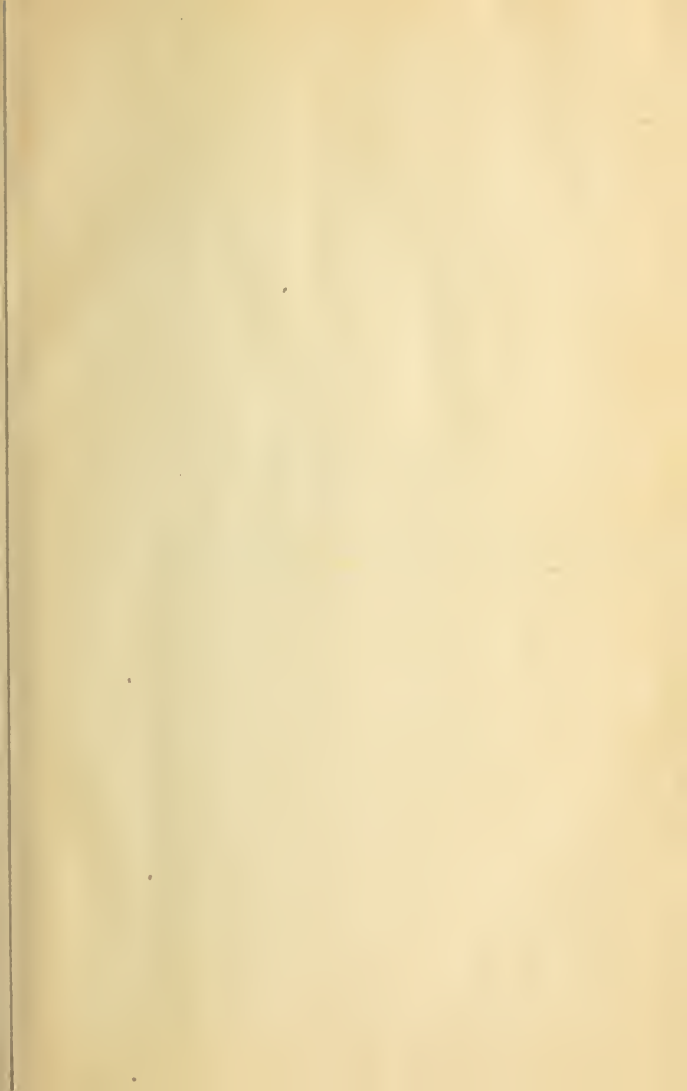
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ELEMENTARY

COMMERCIAL GEOGRAPHY

London : C. J. CLAY AND SONS,
CAMBRIDGE UNIVERSITY PRESS WAREHOUSE,
AVE MARIA LANE.

Glasgow : 263, ARGYLE STREET.



Cambridge : DEIGHTON, BELL AND CO.

Leipzig : F. A. BROCKHAUS.

New York : MACMILLAN AND CO.

Pitt Press Series.

ELEMENTARY
COMMERCIAL GEOGRAPHY

63-88

BY

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SECOND EDITION REVISED AND ENLARGED.

CAMBRIDGE:
AT THE UNIVERSITY PRESS.

1894

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Cambridge:

PRINTED BY C. J. CLAY, M.A. AND SONS,
AT THE UNIVERSITY PRESS.

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PREFACE TO SECOND EDITION.

THE book has been revised throughout by the aid of official publications, and the facts are as far as possible brought down to date. It is enlarged by treating more fully of the principles of Commercial Geography, by describing the African possessions of the European powers in greater detail, and by many small additions in every chapter. Some additional statistics designed to show the changes now in progress in the staple trade of countries have also been introduced, and a few doubtful statistics previously given have been removed. These tables of figures are intended to be studied but not to be committed to memory. It may be found useful to treat each table graphically in the way shown for gold and silver on p. 20.

The *Atlas of Commercial Geography* in the Pitt Press Series has been specially prepared to be used along with this book.

A detailed index has been compiled which should facilitate reference, and the comparison of facts which are treated both in Part I. and in Part II.

The teacher using this book is urged to supplement its information by reference to Mr Keltie's *Statesman's Year Book*, or the *Imperial Institute Year Book* for the current year, and the latest edition of some such work as *Chambers' Encyclopædia*. The *Board of Trade Journal*, the *Journal of the Society of Arts*, and in a less technical way the *Geographical Journal* and the *Scottish Geographical Magazine* are full of valuable information on recent changes. There are several good weekly papers dealing more or less directly with commercial geography, but a diligent study of the daily newspaper will be found more serviceable than anything else in enabling a teacher to keep abreast of his facts.

H. R. M.

1, SAVILE ROW,
LONDON, W.
November, 1894.

EXTRACT FROM PREFACE TO FIRST EDITION.

“Most space has been given, as seems proper in a British text-book, to the United Kingdom, India and the Colonies, and next to the countries with which there is most British trade, the United States, France, and Germany; but an effort has been made to treat each country or colony from the stand-point of a native. It is assumed that the scholar is familiar with the topographical geography of the British Islands; and that he makes constant reference to a good atlas. Maps should be used continually, and sketch-maps drawn by the scholars themselves on every occasion.

In the description of each country the names of towns with over 100,000 inhabitants are given in capitals, those of smaller towns in small capitals, and the population in thousands is added. Numbers are printed in antique figures, e.g. 1,500,000; but when expressed as thousands in modern type, e.g. 1500 thousand, and as millions in heavy type, e.g. **1·5** millions. The word *British* is used for “of the United Kingdom,” *Great Britain* however means the one island of that name. *England* is employed in its strict geographical sense, excluding Scotland, Ireland, and Wales.”

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PART I.

GENERAL PRINCIPLES OF COMMERCIAL GEOGRAPHY.

CHAPTER I. INTRODUCTORY.

Definition. The use of maps. Natural Conditions and Resources. Commerce. Money. Free Trade. Protective Tariffs.

Commercial Geography is the description of the Earth's surface with special reference to the discovery, production, manufacture, transport and exchange of useful or desirable things. It is geography applied to the purposes of commerce; and it describes the Earth in such a way as to bring into prominence everything which enables people to turn natural conditions to practical account. Two entirely different kinds of preliminary study are necessary in order to understand the principles of Commercial Geography. These are

Physiography, which includes the description of commodities as they exist naturally, their distribution over the world, the various natural conditions, such as climate and weather, that facilitate or hinder their transport, the mechanical contrivances that apply natural agencies to their manufacture or improvement. This gives an inventory of the world and its contents viewed as a vast workshop at rest, and without workmen, but containing the raw materials, machinery, and power all ready for use.

Economics, or the principles of exchanging commodities, the use of money, the laws of supply and demand, the forms of government, and the regulations for the conduct of trade between nations. This describes the rules which the workers in the great world-workshop must accept, if the various divisions are to work harmoniously and to the best result.

Then *Commercial Geography*, or the description of the world in its relation to man as a trader, can be really understood. It describes and explains the natural divisions and artificial boundaries of countries, the distribution of population, towns with their special industries, and the laws, manners and customs of the people. In fact it pictures the actual condition of the world-workshop, showing what stores of raw material are being utilised, the amount of work done in each part, and the way in which the different workmen act, either following, neglecting or transgressing the rules of the establishment.

While it is possible to pick up enough knowledge of the two branches of preliminary study by paying attention to the facts of Commercial Geography as they are described for each country, it is absolutely necessary to possess a sound groundwork of general geography, and to go through the drudgery of learning the exact positions of countries, with their boundaries, and the positions and distances apart of the chief towns. Maps must be thoroughly understood, and the student of geography should learn to read a map as readily as a book. The Atlas of Commercial Geography in this series has been specially designed to illustrate this book and should be used along with it.

The mathematical facts of geography are fixed, unalterable and fundamental, they may often be studied better from old text-books than from new ones. The physical facts of geography change so slowly as to be permanent when measured by the term of human life, but they are not yet fully investigated, so that new research continues to be rewarded by fresh discoveries. Political geography, dealing with changes of boundaries and of laws, changes more rapidly, and on this account text-books soon pass out of date and become misleading; but the practical aspects of Commercial Geography change more rapidly than

either, hence every definite statement as to commercial conditions should be fixed by a date. In endeavouring to find the reason for the facts of commercial geography a great many different factors have to be considered. In some instances the reasons may easily be found; for example we may take the case of copper. Much ore of this metal is mined in the Andes of Chile; it is partly separated from other things with which it is combined and then shipped to Swansea in Wales, where the metal is extracted and purified. It may then be sent to Birmingham, and used in the construction of a steam-engine which, when finished, is possibly sent out to Chile again to haul ore at the very mine whence the material had been raised. A thoughtful consideration of the facts of Commercial Geography explains why the ore is taken not from the mines of Cornwall but from those of Chile; why it is smelted at Swansea, and manufactured at Birmingham; why the Chilians do not extract the copper from their ore and work it into a steam-engine themselves when they want one; and why, when they have to buy an engine, they order it from Britain, not the United States. In many instances, however, the reason for industries being centred in particular towns does not appear until the commercial history of the locality has been studied: for example the great jute manufacture in Dundee, which is one of the most distant sea-ports of the United Kingdom from the source of raw material. In this book the historical aspect of commercial geography has necessarily been kept in the background in order to give space to the chief facts as to the present state of things, and it is possible only to refer to its importance here. The history of commerce is of itself a very useful and interesting study, explaining the changes which have taken place in the staple products of different countries and in the sources of commodities.

Natural Conditions. The features which give a region commercial importance are its position, configuration, climate, natural resources and people. A country which by its **position** is easily accessible from all parts of the inhabited world, which has numerous inlets of the coast to form harbours, and is placed beyond the fear of invasion by natural barriers is well adapted for commerce. These conditions are only found in islands, such as those of the United Kingdom, with deeply indented shores giving a long coast-line. Switzerland is protected from enemies by its mountains, Russia is opened up to commerce by its vast system of navigable rivers and canals; but the former cannot compete with sea-coast states in commerce, and the latter

has thousands of miles of flat land frontier bounding neighbouring and possibly hostile countries, and is not secure from invasion. The **configuration** of a country, i.e. the form and arrangement of its mountains, valleys, high and low lands, determines the size and directions of its rivers, and the value of its soil for cultivation. It also fixes the main lines of communication along which roads or railways may be made. The short rapid streams and barren mountains of northern Scotland, for example, and the slow, barge-bearing rivers and rich flat wheat-lands of eastern England owe their commercial character mainly to configuration. **Climate** depends on position and configuration. Temperature of the air is subject to greater extremes and the rainfall is less in the heart of a continent than near the sea. Summer in Britain, and still more in Ireland, is far cooler than in Russia in the same latitude; but in the latter country the rivers and sea-ports are closed for months in winter by ice, while those of the Atlantic coast are always kept open by the influence of the comparatively warm sea water.

The **natural resources** of a country are mainly the mineral commodities and agricultural produce that it yields. With the constant demand for machinery and fuel, the possession of coal and iron secures the commercial success of any region. A discovery of gold, silver or diamonds often brings a rush of people to a barren and difficultly accessible district: while the precious deposits last railways are made, the soil is improved for agriculture, towns are built; and when the supply is exhausted the result may be a self-supporting settlement permanently established and in full communication with the world. The position and industries of towns are usually fixed by the existence of natural resources or of natural lines of communication, but the most powerful agent is the personal energy of enterprising and persevering men, who by superior education, or scientific knowledge, or practical foresight, have often been able to found towns and industries in situations which no theoretical considerations would suggest or explain.

Commerce arises from the division of labour among men, and the difference in the productions of various parts of the Earth. In its simplest form, that of barter, one man

spends his time in collecting or making a quantity of some one necessary thing; he keeps as much as he wants for himself, and takes the rest to another person who has occupied his time in collecting or making something else equally necessary; the two exchange their surplus commodities and each gains an equal advantage.

Money. As society became more complex it was convenient to have some symbol of value that could be easily kept and carried, and would be readily accepted in exchange for anything useful. This symbol of value in different countries takes the form of cowrie shells, kola nuts, mats, cloth, brass wire, bricks of tea, or metal coins; in all civilised countries it is now either gold or silver, all values being reckoned in terms of these metals. In commerce it is often convenient to make use of written or printed promises to pay (bills or bank-notes) instead of money. In primitive society each man caught or cultivated all he required for living, unless he took it from some weaker person who had done so. As civilisation progresses, robbery is not allowed, the number of desirable things increases rapidly, and it becomes necessary to seek for commodities in far-off lands and carry them long distances. Ingenuity strengthened by exercise invents new means of manufacture and communication; and advantage is taken of natural phenomena like the trade winds, or contrivances like the steam-engine, in order to give increased speed and security. Laws are framed and treaties made to regulate conduct in matters where the wishes of one man or state might otherwise lead to actions hurtful to the community or to other countries.

Trade. The current of trade naturally tends to flow from places where there is an abundant **supply** of any commodity to those where there is a **lack** and a **demand**. Thus more wheat is grown in America than can be eaten, more must be eaten in Britain than can be grown, so wheat-ships are always crossing the Atlantic from west to east. The amount of trade in any commodity may be measured in two ways, either by taking account of the *quantity* or of the *value*

which changes hands. These often give different results, for example four times as much cotton was exported from the United States in 1890 as in 1866, yet because of the fall in price which occurred the value in 1890 was 12 per cent. less than in 1866. As a rule in this book the amounts are stated by quantity when speaking of commodities and by value when speaking of the total trade of countries. The *natural barriers* to the flow of trade, such as seas and mountains, have been successfully overcome; but *artificial barriers* of a much more serious kind exist in the shape of **tariffs**. In the United Kingdom alone the **free trade** system prevails; with a few exceptions all goods are allowed to enter or leave the country wherever they come from and wherever they go to, without charge. This method is believed to be the best and wisest in the long run, and to be in harmony with the laws of Political Economy. Most continental nations, the United States and British colonies follow the older system of **protection**. The protective tariff is a tax, often calculated not on the quantity but on the value (*ad valorem*) of the imports, levied on all foreign commodities which might have been produced in the country. Under it manufacturers are generally allowed to import raw material free of duty, but the public must pay dearly for the manufactures, as the cheaper imported goods are raised to even a higher price than the home productions by the tax. The **prohibitive** system consists in absolutely preventing the import or export of certain commodities, but although once common it is now rarely applied on a large scale, except in the case of certain parts of Africa and the Pacific islands where international agreements prohibit the sale to natives of alcoholic drink and explosives.

Trade Restrictions. Besides the ever-varying tariff systems of the world, trade is subject to a variety of minor restrictions. Most Governments have certain **monopolies** such as letter-carrying, railways, tobacco or opium growing, with which private firms are not allowed to compete. The most powerful manufacturers in special industries sometimes combine to form a **syndicate** to buy all of a certain commodity in the world and so keep up the price; or they may for a time reduce the production

of commodities until the demand becomes keener and prices rise. Workmen on the other hand may institute **strikes** in order to get higher wages or to work fewer hours. All these things disturb the normal course of trade, but **war** is a far more disastrous and less rational hindrance than any. The world is now so interwoven with the bonds of commerce that the result of a rupture anywhere disorganises the whole. In the American civil war the cotton-spinners of Lancashire suffered for a time as much as the cotton growers of Georgia. Even in time of peace there are great inconveniences from this cause. The State railways of the continent are liable on a rumour of war to be closed to commerce; towns must be fortified, hindering their natural growth; in most countries every young man must give up several years to military service; and to maintain the army and defences heavy taxation is necessary which reduces the national wealth and contracts trade.

CHAPTER II. MINERAL COMMODITIES.

Distribution, production and uses of Gold, Silver, Mercury, Iron ores, Pig-iron, Copper, Tin, Lead, Zinc, Platinum, Nickel, Aluminium, Manganese, Sulphur, Graphite, Diamond, Salt, Nitrate, Borax, Phosphates, Asbestos, Building materials, Mineral fuel—peat, lignite, coal and anthracite. Coal mining. Shale, Petroleum, Natural Gas, Asphalt. Utilisation of Resources.

Mineral Commodities are those which occur in the substance of the Earth itself or on the surface of the ground, and have not been recently produced by the action of life. Although the world is composed of more than 60 different kinds of matter or elements, only about 10 or 15 of them, either pure or combined together in various ways by twos or threes, are of practical use. All commodities are obtained within a mile of the surface of the ground; mines become warmer so rapidly as they go deeper that if they could be sunk to a depth of about two miles the air would be as hot as boiling water. The deepest boring yet made in the Earth's crust is 5834 feet or 1 mile, attained in search of coal near Merseburg in Saxony.

The different kinds of rocks formed during the ages of the past have been laid down in great sheets one over another in orderly succession. The crust of the Earth is, however, always rising slowly in some places, and sinking in others, while wind, rain, ice, running water, and waves are continually grinding down and carrying away the land, and gradually forming new rocks in lakes and seas. The coal measures, for instance, were originally spread like a sheet over great tracts of older rocks, and then covered deeply by newer deposits, so that they could never be reached by human power. In the north of England, to take a particular case, all these layers of rock have been bent up in an arch forming the Pennine Hills, and the crest of this has been worn

away until the coal measures have been exposed and then completely removed; but on each slope of the ridge coal is found at or near the surface, and thus there are coal-fields in Yorkshire and Lancashire. A valley is sometimes cut out by a river through the successive layers of rock, which can then be reached on both sides of the gorge. By studying the order of the changes which the Earth's surface undergoes, and the nature of the surrounding country, a geologist is able to tell where valuable deposits are likely to be found, and where it would only be waste of money to look for them.

Metals are sometimes found in the pure or native state, but more often in combination with sulphur, oxygen or carbonic acid. **Gold** is one of the few usually found pure. It almost always occurs embedded in the quartz which fills up veins or cracks in the more ancient rocks, and it has been found in all parts of the world.

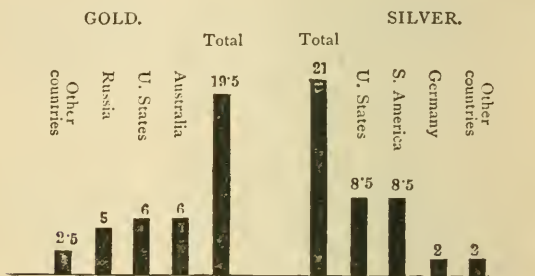
Gold may be extracted by mining the quartz veins or "reefs," then crushing the mass into small pieces by means of a stamping "battery," and washing away the lighter quartz by a stream of water which leaves the heavier gold behind; but it is usually more economical to use chemicals such as cyanide of potassium, chlorine solution, or metallic mercury to dissolve out the gold. Rivers running over gold-bearing rocks wear them down into gravel which yields large supplies of gold by simply washing away the lighter stones. The hardened masses of old river-drift which occur in some of the American cañons are quarried by "hydraulicking" or washing away the cliff by a stream of water at high pressure from a pipe like an enormous fire-hose. The chief gold mines of Europe are in the Ural Mountains and in the Transylvanian Alps. Gold fields recently opened up in many parts of South Africa, have led to the extension of organised government over the whole region from the Limpopo river to the Zambesi and to the establishment of several prosperous towns. Many cities in the western United States grew up like mushrooms during the "gold fever" of 1848 and subsequent years, although some dwindled away when the supply was exhausted, and in Australia similar results followed the discovery of precious metal in 1850.

Silver is rarely found pure; it occurs most often in the state of ore combined with other elements, such as sulphur and chlorine, and often with compounds of lead. It is usually mined from veins in solid rock, and the metal must be separated from the ore by chemical processes. The most important silver mines are in the western United States,

along the Pacific slope of the Andes in South America, and in the extreme south-west of New South Wales in Australia.

For the last fifty years silver has been growing cheaper than gold when measured by the amount of other commodities that has to be given for it. In 1840 the value of gold was 16 times that of silver, in 1889 it had increased to 22 times. This fact is spoken of as the **depreciation of silver**.

Value * in millions of pounds sterling of Gold and Silver produced in 1885.



Production of Gold in million pounds sterling—1891.

United States.	Australia.	S. Africa.	Russia.	All Countries.
7	5	5	4.5	26

Production of Silver in million pounds sterling—1891.

United States.	S. America.	Germany.	Australia.	All Countries.
12	8.5	3	2	29

Mercury, or *quicksilver*, a liquid metal, carried in cast-iron bottles and used in extracting gold, is produced in few places; the historic Spanish mines of Almaden yield about half the supply of the world, those of New Almaden in California about one quarter, while Austria and Italy supply the rest. Up till 1883 the Californian output was the

* This diagram is made on the plan of representing each 2 million pounds by a square, one-tenth of an inch in the side. It will give the learner a grasp of the relative importance of the various countries and of their produce if he will construct for himself similar diagrams on a larger scale of the other tables of figures given in this book.

greatest. No metal fluctuates more in supply and price, the price per flask of 76 lbs. having varied between £26 and £5 during the twenty years 1874—1894.

Iron is found everywhere, and there are many kinds of ore. *Magnetic ore*, the richest and purest form, is a compound of iron and oxygen; *Red* and *Brown Hematite* are also oxides but less rich in metal; *Spathic ore*, *Clay-band* and *Black-band ironstone* are compounds of iron and carbonic acid. Clay-band and black-band ironstone are the commonest British ores; but hematite is the purest, and best adapted for steel-making; it is mined in Cumberland, and an increasing amount is being imported from Spain.

Formerly when charcoal was used for smelting, as it still is in Sweden, ironworks were always near great forests. In several countries iron ores occur with coal, which is the chief fuel now employed for smelting, either in its natural state or after heating to form coke. The mixed ore and coal, along with limestone, are continuously fed into huge blast-furnaces, 70 to 100 feet high, in which the fire is kept up for months or years at a time. The molten **cast-iron** (an alloy of iron with carbon) is drawn off at intervals, and allowed to run into open moulds in sand, where it hardens into bars called *pigs*. In the process of Bessemer, and those of other inventors, cast-iron is purified by burning out part of the carbon until the metal becomes **steel**, or by burning it out altogether until pure iron is left. When made by the older processes, now very rarely employed, steel was expensive, the cheapest costing about £25 per ton in 1858; but in 1888 its price by the new processes was reduced to less than £4, and the metal, being far stronger than iron, has come into almost universal use. Great Britain and the United States are the greatest iron-producing countries: until 1889 Great Britain kept the first place, but since then the United States has produced more. Germany and France come next in order. Large deposits of ore exist in Sweden, Spain, Russia, Italy, and in many other parts of the world; these have not yet been largely utilised, in many cases on account of the absence of fuel.

World's Production of Pig-iron in million tons.

	U. Kingdom.	U. States.	Germany.	France.	All Countries.
1885	7	4	3	1.5	19
1890	8	9	5	2	27

Copper is found pure in great masses in the mines on the shore of Lake Superior, but it is most abundant in the

form of ores—oxides, carbonates, or sulphides—spread in veins through rock. The sulphur ores of copper are very difficult to reduce to the metallic state. Copper-works near foreign mines are rapidly improving, but much ore and *regulus*, or partially purified metal, are sent from Spain, Australia, and Chile, to Swansea, Widnes, and Glasgow, to be smelted by skilled workmen, the objectionable sulphur fumes being caught and used for making sulphuric acid. The famous copper-mines of Cornwall are now exhausted. The Calumet copper-mine near Lake Superior is the deepest which has ever been sunk, work being carried on at the depth of 3900 feet in 1890.

Annual Production of Copper in thousand tons.

	U. States.	Spain.	Chile.	Germany.	Australia.	Japan.	All Countries.
1886	70	50	35	14	10	11	210
1891	127	53	20	16	7.5	17	280

Copper is most largely used for the wires of telegraph cables and other electrical apparatus, for steam-pipes, and in the preparation of brass, bronze, gun-metal, and similar useful alloys. The price, like that of most metals except iron, varies greatly.

Tin, found along with copper in Cornwall, is still produced there to a considerable extent. There are very important mines in Australia, but the Malay peninsula is the tin centre of the world. The heavy rains of that region wear down the tin-bearing rocks and cover the river valleys with gravel containing ore, which is collected and smelted by Chinese labourers. The British port of Singapore exports the metal, collected from the neighbouring islands, especially Banka. It is used pure as block tin, but chiefly for coating iron, forming *tin-plate*, and in making *bronze*.

Annual Production of Tin in thousand tons.

	Malay Peninsula.	U. Kingdom.	Australia.	All Countries.
1886	22	9	8	40
1891	35	9	6	52

Lead is usually found combined with sulphur as an ore called *galena*; it is chiefly produced in the western United States, where the ore is doubly valuable on account of the large proportion of silver it contains, and in Spain. Lead is most largely used for water-pipes, for roofing, for the fittings of chemical works, and in making alloys.

Annual Production of Lead in thousand tons.

	Spain.	U. States.	Germany.	U. Kingdom.	All Countries.
1886	130	120	80	40	380
1891	160*	170	100	30	470†

Zinc or *Spelter* is much used for making *brass*, and also for coating iron-work (then called *galvanised iron*). It is chiefly mined and smelted in Germany and Belgium.

Annual Production of Zinc in thousand tons.

	Germany.	Belgium.	U. States.	U. Kingdom.	France.	All Countries.
1886	120	90	35	25	15	300
1891	130	100	67	29	18	350

Platinum is a rare metal, always in demand on account of its infusibility, and incorrodible nature. It is now used chiefly for chemical apparatus, though once employed in the coinage of Russia. The main supply is from the Ural Mountains, a little also comes from Brazil.

Nickel occurs in New Caledonia, Canada, the United States, and Norway in greatest amount; it is difficult to prepare, but is employed, alloyed with other metals, for the small coins of a great many countries. It is extensively used for plating steel, for coating iron cooking vessels, for forming an alloy with steel for armour-plates, but principally in making the alloy with copper known as *German silver*.

Aluminium is the metal contained in common clay, but usually extracted from the minerals known as Cryolite and Bauxite. Ten years ago it was scarcely in use but in 1893 over 500 tons of the metal were produced. On account

* In 1888.

† Estimate.

of its great strength and lightness (only about one quarter the density of iron) it is used largely for scientific instruments, boat-building, etc., and for making the alloy with copper known as aluminium bronze.

Manganese is a metal of value as an alloy in the preparation of certain kinds of steel. The ore is mined chiefly in the United States, the Caucasus and Chile.

Sulphur, a non-metallic element, found nearly pure, occurs in all volcanic regions, and is worked chiefly in Sicily. It is principally employed for making sulphuric acid in Great Britain, the United States, and Germany.

Graphite, or *Plumbago*, one form of carbon, the only other non-metallic element of commercial importance occurring pure, is used for making "lead" pencils, for lubricating machinery, polishing ironwork, and other purposes. The British supply comes chiefly from Ceylon, but there are mines in Siberia and Germany.

Diamond, another form of pure carbon, is the most brilliant and costly of precious stones. India was once the great source of diamonds; the inland provinces of Brazil became more valuable during last century, and since 1867 the fields of Kimberley in Cape Colony have been most productive. Diamonds to the value of about 4 million pounds are annually exported by post from South Africa to Amsterdam, and London, where they are cut and polished.

Salt is prepared along the coasts of warm countries by evaporating sea-water in shallow tanks, exposed to the sun. A million tons a year are manufactured thus in the south of Europe; France and Spain producing more than half of it. In colder climates artificial heat is usually employed; but in some parts of Russia the brine is subjected to great cold and the ice, which contains scarcely any salt, is removed as it forms, the water being thus separated from the salt. **Brine springs** are found by boring in many parts of the world, and largely supply the United States and China, the bores sometimes reaching 4000 feet in depth. These

frequently yield natural gas as well, which the Chinese have utilised for centuries to evaporate the brine.

There are **mines** of rock-salt in England, chiefly in Cheshire, and on a gigantic scale on the Continent. The vast mine of Wieliczka near Cracow contains 30 miles of galleries and halls quarried in a mass of solid salt 500 miles long, and 1200 feet thick, and an entire inhabited village is built in the larger caverns far out of sight of the sun. The cheapest way of raising salt is that usually practised in Cheshire; fresh water is led into the mines, pumped out again, when saturated, and evaporated until the salt crystallises. The saline lakes and salt plains of hot rainless regions, such as the Aral-Caspian district in Asia, and the Great Basin in the United States, contain immense quantities of salt waiting means of transport to become of value. Salt is used most largely for the manufacture of soda.

Cubic nitre (nitrate of soda) occurs in the Andes countries of South America; more than a million tons a year are shipped to Europe for use in chemical manufactures and as a fertilizing agent. Great deposits of **Borax** or *Tincal* are found in the deserts of Tibet, North America, and Peru.

Another important mineral product used mainly as a fertilizing agent is **Phosphate Rock**, which is worked on a large scale in the southern United States.

Asbestos also is much in demand, its long fibres being capable of manufacture into fire-proof fabrics or into packing for steam-engines and other machinery where a soft substance which can withstand great heat is required. It occurs largely in Italy and Canada.

The **Building Materials** accessible in any place depend on the geological nature of the country. *Limestone*, *sandstone*, *granite*, or other formations, are quarried as building stones, and these are used in all regions where solid rocks come to the surface. **Brick** is baked from *clay*, and where extensive deposits of this material cover the ground bricks and tiles are used for building purposes. Considerable trade takes place in building materials of special kinds, thus *slate* from Wales, *flag-stones* and *granite* from Scotland, and *marble* from Italy, are exported to all

parts of the world. **White Sand** for glass-making, **kaolin** or decomposed granite for the finest China-ware, **limestone** to be burnt for mortar and cement, the material for grind-stones, lithographic stones and the like, are sought for and transported to the centres of manufacture and consumption.

Mineral Fuel. The residue of ancient vegetation is of great economic value as fuel. The difference between the various forms—*peat*, *lignite*, *coal*, and *anthracite*—is one of degree. About half the weight of dry wood is carbon, the other half being composed of hydrogen and oxygen. The effect of pressure and heat in the absence of air, as when a vegetable deposit is buried deeply under rock material, is to decompose the wood, much of the oxygen and some of the hydrogen, with very little of the carbon, going away as gases, while the residue grows blacker and harder. As this process continues the proportion of carbon in the residue becomes greater, and the fuel increases in heating power.

Peat is the slightly mineralised residue of the mosses and heaths which form the vegetation of wet, temperate climates. It abounds in Ireland, Scotland, the great northern plain of Europe, and in the desolate islands of the southern hemisphere, such as the Falklands and Kerguelen. **Lignite**, or *brown-coal*, a yellowish or brown substance with a woody appearance, occurs in broken veins or irregular layers, sometimes of great thickness, amongst tertiary rocks, that is, rocks less ancient than those yielding true coal; it is specially abundant along the line of some great mountain chains, such as the Alps in Europe and the Rockies in America. The more ancient carboniferous rocks belong to a time when a dense and luxuriant tropical vegetation of tree-ferns and giant club-mosses overran the Earth; but ages have elapsed since the decaying leaves and stems were covered with mud, and the pressure of newer rocks, deposited during the stupendous changes of the Earth's surface, has almost effaced the vegetable appearance, and produced the black brittle substance known as **coal**. Some varieties are very bituminous, or yield a great deal of gas and tarry oils when heated.

Coal mining. This coal, like the **anthracite**, resulting from the removal of the bituminous part, occurs in beds or seams which in some places have a thickness of more than 60 feet; in Britain they average about 3 to 5 feet, though some exceed 30, and seams of only a few inches are often worked. Coal-seams sometimes crop out on a hill-slope, or

along a valley, and then they are mined by tunnels driven in with a slight upward slope to let any water drain off. The deposits, however, usually require to be reached by shafts or pits sunk vertically downward, from which galleries are formed following each seam. The deepest coal-pits are now in Belgium, where some reach 3500 feet beneath the surface, and in many places coal-mines run far under the sea. Coal-pits were simply shallow excavations until the invention of the steam-engine gave sufficient power to pump out the water always flowing into them from the springs they traverse. Ventilation in deep workings must also be kept up by steam-fans in order to carry away the coal-gas or *fire-damp*, the presence of which may give rise to explosions, although the use of safety-lamps, through which flame cannot pass, greatly reduces this risk. Dry coal-dust alone often causes explosions, and dryness in a mine is nearly as great a danger as flooding.

Distribution of Coal. Holland, Denmark and some other countries have no coal; a few, such as Sweden and Italy, possess very little; but coal-fields are found in most parts of the world, although many, such as those of China and Persia, have never been investigated, and are scarcely worked at all. Great Britain, the United States, and Germany produce more than eight-tenths of all the coal raised in the world. The total annual production is a little over 500 million tons a year; which is contributed somewhat as follows:—

Annual Production of Coal in million tons.

	U. Kingdom.	U. States.	Germany.*	France.	Aust.-Hung.*	Belgium.
1886	155	100	80	20	17	17
1891	185	150	84	26	23	20
	Russia.	Australia.	Canada.	Japan.	India.	Spain.
1886	4	3	2	1	1	1
1891	7	4.5	3	2.4	2.2	1.3

Bituminous Shale, from which paraffin oil and other products are distilled, occurs in few places, and is mined only in Scotland, France, and New South Wales.

Petroleum—a natural mineral oil resembling paraffin—is found in almost all parts of the world. It is worked commercially at Baku on the Caspian Sea, where the natural supply is greatest, in Galicia on the frontier of Hungary, in Rumania, in other parts of Europe, throughout Asia, in northern Peru and other parts of South America. In the eastern United States oil was struck in 1859 while

* Includes Lignite.

boring for brine, and the greatest petroleum industry of the world has now its seat in Pennsylvania. Petroleum requires to be refined by distillation and other processes before it is fit for use ; it is carried on land in tank waggons or by pipe lines, and in barrels on sailing ships, or in tank steamers by sea, the cargo being pumped on board the latter and discharged with great rapidity. About $2\frac{1}{2}$ million tons of purified mineral oil are burnt every year, of which the United States supplies 2 million tons.

Natural Gas occurs in many countries and has been utilised for raising steam, heating furnaces for melting glass and metals, and for lighting towns. The supply, usually very abundant when first struck in boring, falls off after some time : the year of greatest production was 1888, when many manufacturing towns in Pennsylvania, Ohio, Indiana, and Ontario used scarcely any other fuel.

Asphalt, though akin in composition to petroleum and occurring naturally in vast deposits, as in the Pitch lake of Trinidad, or in seams, as in Italy and the United States, is not mainly used for fuel. Its chief use is as a paving material when mixed with other substances.

Utilisation of Resources. In this sketch of the mineral wealth of the Earth it will be noticed that some products, like gold or coal, have simply to be *collected* in order to become useful ; other products, such as the ores of metals, and petroleum, require to be *worked up*, before they can be applied practically ; the problem being in all cases to extract the valuable part of the raw material and produce it in a pure state. In all these processes of extraction, transport and purification, energy is expended, and as a rule this is obtained by burning fuel. Now, however, the energy of rivers, waterfalls and even of the tides is being utilised for separating metals from their ores and for doing other work, through the agency of electricity.

CHAPTER III. VEGETABLE COMMODITIES.

Vegetation. Natural plant regions. Agriculture. Staple food-materials—Uncultivated fruits, Cereals, Potato. Import of grains. Sugar. Fruit. Spices. Tobacco. Drugs. Oils. Plants yielding drink—Alcoholic, wine, beer, spirits; Non-Alcoholic, cocoa, coffee, tea. Textile plants—flax, jute, hemp and cordage fibre, cotton. Cotton manufactures. Paper. Gums and Resins. Dye-stuffs. Timber. Synthesis of organic compounds.

Vegetation is a form of life through which the energy of the Sun re-arranges some of the matter composing the air and the crust of the Earth, producing numerous valuable commodities. Vigorous plant-life depends chiefly on suitable soil, sufficient warmth, moisture, and abundant sunlight. Different climates are best suited to particular kinds of plants, and similar climates in all parts of the world have similar vegetation, the luxuriance and variety decreasing from the equator toward the poles, and from sea-level toward higher altitudes.

Natural plant regions. There are four great barren zones of the Earth's surface; (1) The *Ice Fields* within the Arctic circle, fringed to the south by moss-covered treeless *Tundras*; (2) the chain of *North Tropical Deserts*, where rain-fall is slight or wanting, and heat intense, represented by the Sahara in Africa, the deserts of Arabia, Persia, India and Tibet in Asia, and the alkali wastes of the United States; (3) the *South Tropical Deserts* of the Kalihari in South Africa, and the deserts of Central Australia; and (4) the ice-covered *Antarctic* continent.

Much of the uncultivated land of the world bears rich **grass**, but few trees; this is particularly the case in the *Steppes* of Southern Russia, the *Llanos* of the Orinoco, the *Pampas* of the Plate, the *Prairies* of North America west of the Mississippi, and the *plains* bordering the deserts of Africa and Australia. These regions supply food for great herds of cattle and sheep. Dark pine forests cover the lower mountain slopes,

and natural woods of oak, ash, elm, and beech overspread many of the plains of the northern temperate zone. In the tropics dense primeval forests tangled with brushwood and climbing plants extend almost without a break for a thousand miles at a stretch wherever there is sufficient moisture.

The object of **agriculture** is to produce stronger and more fruitful plants, and to assist their growth by improving the soil and supplying moisture when necessary by canals or other irrigation works. When crops are carried away, instead of being left to decay naturally where they grew, the soil becomes exhausted of certain necessary constituents, and another good harvest cannot be got until these have been restored. In Egypt, China, and the north of India rivers, which overflow periodically, spread a new layer of fertile mud over the fields; but usually fertilising agents or *manures* yielding phosphates and nitrates have to be applied. By the **rotation of crops** one kind of plant is raised on a field only for one year; another, which mainly appropriates different constituents, takes its place, and several years elapse before the first crop is again sown. A common rotation in England is Turnips, Barley, Clover, Wheat, in successive years. By careful management land, naturally poor, may be made to produce far more abundantly than the best soil in a natural state; for instance, in England the average crop of wheat is about 35 bushels of grain per acre, while in Russia with better soil, but worse cultivation, it is only 6.

The staple **Food Material** of each country depends on the soil, climate, and facilities of communication. Sometimes it grows wild, like the **coco-nut** on the palms of tropical coasts, and the **banana**—most fruitful of all food-plants—in all tropical lands; or a certain amount of attention may be required, as for the **date** in Arabia. Careful **cultivation** is necessary to supply the great quantity of food-stuffs demanded in thickly-peopled districts. **Cereals**, the most important vegetable foods, are grasses which have been modified by cultivation until their seeds have become very large and nourishing. **Wheat** is the chief food-grain of Western Europe; **barley** is mainly used for brewing, and **oats** for feeding horses. In northern and eastern Europe **rye**, a hardy grain yielding a coarse brown flour, is most used. **Maize**, or *Indian corn*, with stalks 7 to 12 feet high and huge heads packed with close-set grains, is the one native cereal of America. It is grown enormously

in the United States, and largely in Southern Europe, where it forms a considerable part of the food of the people. **Buck-wheat**, the seed of one of the sorrel family is cultivated in Russia, in France, and in alpine districts, but is only eaten by the very poor. **Rice** is almost the sole food of many millions in southern and eastern Asia. It grows in the low swampy deltas of the great Indian rivers, around the Bay of Bengal, and over the wide plains of China, wherever sufficient water can be secured by irrigation. It is also a common crop in Egypt, in the north of Italy, and in the southern United States. **Millet** in innumerable varieties is the staple food of most of the people of India, and is also greatly cultivated in China. The **potato** has for a long time been the main support of the peasantry of North Germany and Ireland, and **chestnuts** almost take the place of grain in some parts of Italy and Spain. The chief constituent of all these foods is *starch*, which occurs nearly pure in the **arrow-root** of the West Indies and other tropical regions, in **tapioca** from the **manioc** root of South America, and in the pith of the great **sago** palm of the Malay Archipelago.

When the density of the industrial population is great the ground cannot yield a sufficient supply of food and there must consequently be **import of grain**. This is the case in all European countries except Russia, Austria-Hungary, and the Balkan States; but the cheapening of means of transport has brought all the producing regions of the world within easy reach. In 1887 about **74** million bushels of wheat were grown in the United Kingdom; but, as each inhabitant requires on the average $5\frac{1}{2}$ bushels a year, nearly twice the harvest had to be brought into the country to feed the people. The equivalent of **144** million bushels of wheat was imported, largely in the form of flour, which is ground abroad to reduce the cost of carriage. More than half the supply came from the United States; the other sources were, according to quantity, India, Russia, Canada, Chile, Germany, and Australia; but the exact order changes from year to year according as the harvests in the various countries are good or bad. Formerly a tax was imposed on foreign corn brought into the United Kingdom, but in 1847 the repeal of the Corn-laws put a stop to this system of protection.

Average Annual Production of Cereals and Potatoes in million bushels.
1881—90.

	U. States.	Russia.	Germany.	France.	Aust.- Hung.	United Kingdom.	India.	Italy.
Oats	590	560	300	250	150	170	—	—
Maize	1680	20	—	26	110	—	—	80
Wheat	440	240	93	310	160	78	250	120
Rye	30	710	230	70	120	—	—	4
Barley	55	150	100	50	98	80	—	9
Potatoes	170	460	890	400	410	230	—	28

Sugar occurs in nearly all vegetable juices. The **Sugar-cane**, originally a native of Asia, was cultivated for two centuries in the West Indies by slave labour until 1833, when the abolition of slavery nearly ruined the industry, which has never completely recovered. The cane is now grown in all tropical countries, the East Indies being most important. From the time of Napoleon's wars, when Europe was blockaded against West Indian produce, sugar-making from **beet-root** has been extending on the continent; and now of the 5 million tons or so of sugar annually manufactured more than half is from the beet, most of it being prepared in Germany. The stalks of the Millet (*Sorghum*), the sap of the sugar-maple of North America, and of the date-palm in India yield sugar readily, and considerable quantities are made from these.

Fruit has recently come to occupy an important place in trade. Not only are dried fruits such as *currants*, *dates* and *figs* imported, but *oranges*, *lemons* and *grapes* from Mediterranean ports, *apples* from America, *bananas* and *pine-apples* from the West Indies, *grapes* from South Africa and fruit of several kinds from Australia and Tasmania are brought to Northern Europe in refrigerated chambers.

Spices. **Pepper**, the dried berry of a shrub, comes chiefly from Singapore, the great commercial emporium for the Malay Archipelago, in almost all the islands of which the pepper-plant grows. Much also comes from Java and other Islands of the Dutch East Indies. The same ports send out **nutmeg**, the kernel of a plum-like fruit, and **cloves**, the

dried flower-buds of a plant, which is however more extensively cultivated in Zanzibar and the neighbouring island of Pemba. The rolled bark of the **cinnamon** tree comes chiefly from Ceylon, and the **ginger** root mainly from India, China, and West Africa. **Mustard**, commercially the most important condiment, is imported from the East Indies and Asia Minor; it is also grown in Holland and England. **Vanilla** occurs in Mexico and India.

Tobacco, native to America, grows in almost all climates, tropical and temperate. Over 220,000 tons of the dried leaves are prepared every year in the United States, 150,000 tons in India, about 100,000 tons in Russia, and 60,000 in Austria-Hungary. Germany, Brazil, France, the Philippine Islands, Turkey, Japan, the Malay Archipelago and the West Indies are also large producers. In France, Italy, Austria-Hungary and Spain, the tobacco-trade is a Government monopoly; in all countries it is an important source of revenue.

Drugs. *Cinchona* bark yields **quinine**, the most valuable medicine obtained from the plant world, and, on account of its curative effects in fever, particularly important in unhealthy tropical countries. The tree is a native of the eastern forests of the Andes; but it is now largely cultivated in Ceylon, whence most of the supply for Europe is derived, in Java and in India. Varieties of the **Eucalyptus** tree, native to Australia, have been introduced into all hot swampy districts on account of its power of destroying fever-breeding conditions. A valuable medicinal oil is extracted from its leaves. **Opium**, the dried juice of poppy heads, is a valuable medicine, but it is chiefly used as a narcotic. The **poppy** is cultivated in Egypt, Persia, Asia Minor, and largely in India, where it is a Government monopoly, the 6000 tons exported annually to China yielding 9 million pounds sterling; the largest production is however in southern China. Most drugs are derived from tropical plants.

Oils are pressed from many fruits, particularly from the *Olive*, the *Almond*, the *Oil-palm* of West Africa, the *Coco-*

nut (the dried kernel known as *copra*), *Earth-nut*, and the seeds of *Cotton*, *Flax* (for linseed oil) and other plants. These oils are chiefly in demand for soap-making.

Plants yielding drink may be grouped in two classes, (1) those containing sugar or starch capable of being changed into alcohol by fermentation—the action of microscopic plants contained in yeast—and (2) those bearing leaves or seeds that furnish a stimulating or nourishing beverage when an **infusion** is made with water.

Alcoholic Drinks. The **vine** is the most important of the former class; it flourishes no further north than 48° in France and 52° in Germany; in America its range is from about 38° N. to 38° S. The sweet juice of the grapes when fermented forms **wine**. France is the chief wine country, but the vine-growers there and elsewhere have for many years had a severe struggle against the depredations of a small insect, the *Phylloxera*, which destroys the vine by feeding on its roots. All the southern countries of Europe, and parts of America, Africa, and Australia produce wine. **Beer** is the favourite native beverage in Europe north of 50° N. latitude. It is made from grain, usually barley, converted into *malt* by changing the starch into sugar, then mixed with water and fermented. The resulting liquor is flavoured with **hops**; and brewing is usually centred near hop-raising regions, such as south-eastern England, southern Germany, Bohemia and California. Diluted alcohol, separated by distillation from fermented liquors, is known in trade as **spirits**, the special flavour being due to the origin of the alcohol. *Brandy* is distilled from wine, *whisky* from fermented malt, *rum* from sugar or treacle; large quantities of spirits are made in Russia and North Germany from potatoes, in Rumania from plums, in America from maize, and in different parts of the world from other vegetable products.

Approximate Annual Production of Wine and Beer in million gallons.

	U. Kingdom.	France.	Germany.	Italy.	Aust.-Hung.	Spain.
Wine	—	900	70	660	200	440
Beer	1000	180	900	—	270	—

Non-Alcoholic Drinks. Cocoa, coffee, tea, *yerba maté* (Paraguay tea) and kola nuts, all contain a stimulating substance named *Caffeine*, to which their refreshing properties are due. **Cocoa**, first introduced from America by Columbus, remains the national beverage of Spain. It is prepared from the seeds or "nibs" of the *Cacao* tree, and is chiefly cultivated in Ecuador, Trinidad, Venezuela, and other parts of South America; it has recently succeeded well in Ceylon.

Coffee, long used in Arabia, became generally known in Europe about 1650. The infusion of the roasted seeds is drunk most extensively in the countries on the eastern shore of the North Sea and in the United States. Brazil, where the tree found a congenial home, is the chief coffee-producing country, raising more than half the supplies of the world. Java ranks next, and Ceylon formerly held the third place, but a disease—the *coffee blight*—reduced the export thence from 45,000 tons in 1876 to 9,000 in 1886, and only 2,000 in 1892. British Central Africa seems likely to take an important place in the production of coffee.

Tea is the tender young leaves and shoots of a Chinese shrub or of an Indian tree, the various qualities distinguished by such names as *Pekoe*, *Souchong*, *Congou*, depending on the size of leaf and season of picking. One way of preparing the leaf produces *black tea*, the kind usually drunk in Great Britain; another gives *green tea*, which is preferred in North America. Small crops of tea have been raised in South America, Africa, Australia, and even southern Europe, but China, India, Ceylon, Japan, and Java are the only countries whose production affects the market.

Most of the Chinese tea is consumed in the country, only 110,000 tons being exported out of a total production of perhaps a million tons. The export goes partly overland to Tibet and Russia, some of it in the form of brick tea, but chiefly to Europe by sea. Japan produces mainly green tea and exports three-fifths of the crop to the United States. Since 1840 tea-growing has been spreading over India from the wet and fertile Assam valley, and it was introduced into Ceylon on the failure of the coffee plantations there. From India the total export is about 50,000 tons, and from Ceylon 30,000 a year. Indian and Chinese tea

were used about equally in the United Kingdom in 1887, but the use of Indian and Ceylon tea has increased so rapidly that in 1892 one-sixth only came from China, one-third from Ceylon, and one-half from India. Most tea is consumed in proportion to the number of people in Australia and least in Italy. In the United Kingdom $1\frac{1}{4}$ lbs. were used per head in 1840, and $5\frac{1}{2}$ lbs. in 1892: the use of coffee there is decreasing.

Annual Consumption in lbs. per head of population, about 1886.

	Australia.	U. King.	U. States.	France.	Germany.	Belgium.
Tea	10	5	$1\frac{1}{2}$	$1\frac{1}{6}$	$1\frac{1}{6}$	$\frac{1}{3}$
Coffee	—	$1\frac{1}{2}$	8	3	5	13

Textile Plants. The fibrous bark of trees, dried grasses, palm-leaves, and other vegetable products, are employed for clothing, almost without manufacture, by the uncivilised natives of tropical countries. **Flax** is grown chiefly in North Russia and Germany; nearly three-quarters of the annual world's supply of 500,000 tons coming from the Baltic shores. Belgium ranks after France and Austria-Hungary as to quantity, but produces at Courtrai the finest quality of flax in the market. The blue-flowered flax plant, about 3 feet high, is pulled and steeped in water until the soft parts have rotted away; it is then beaten or *scutched* to break up the woody substance and leave the long fine tough fibres which form the commodity. These are spun and woven into **linen**, a quarter of the world's produce being manufactured in the United Kingdom, chiefly in Ulster and the eastern counties of Scotland.

Jute grows in Bengal on the rich soil of the Ganges valley; the coarse fibre, after being rotted and freed from wood, is exported from Calcutta chiefly by sailing ships round the Cape, and manufactured almost entirely at or near Dundee. Cordage, carpets, and coarse *gunny cloth* for rice bags and cotton bales are the chief products. Gunny bags are exported to India, Australia, and to California for wheat; but as they are now being manufactured in Calcutta to save the expense of transport, there is severe competition.

Hemp, which can grow anywhere, is the best material

for ropes and sail-cloth; that from Italy is the finest, and Russian ranks next. The hard, glistening *Manila-hemp*, the produce of the stems of a species of banana, from the Philippine Islands, is the cheapest and most largely used fibre of this class. Much *henequen* or *sisal-hemp*, the fibre of a plant of the aloe family, is produced in Central America and in the Bahamas. *New Zealand flax* or *phormium*, and *Ramie* grown largely in North Africa, are other fibres used for cordage and coarse fabrics.

Cotton is the staple of British trade, and the United Kingdom now consumes nearly 40 per cent. of all the cotton produced. This proportion was much higher formerly, in 1840 nearly 60 per cent.; but since that time the manufacture has been greatly extending in other countries. The *cotton shrub* or *cotton tree* grows in all tropical and warm temperate countries. The downy hairs surrounding its seeds are separated by *ginning*, and the raw cotton is packed tightly in bales, weighing about 440 lbs., for export to the manufacturing centres. Most cotton is produced in the southern United States; but during the civil war of 1862-65 the cultivation there was stopped, and in order to keep the Lancashire and Lanarkshire mills at work a great impetus was given to cotton growing in India, Egypt, Turkey, South America, and the West Indies.

Annual Production of Raw Cotton in thousand tons.

Average 1888—1890.

United States.	India.	Egypt and Turkey.	Brazil.	All Countries.
1700	550	140	70	2300

The **manufacture of cotton** is the largest branch of textile industry, as shown in the following table of the number of **spindles** in use for spinning cotton, wool, silk and flax.

Million Spindles at work about 1885.

	United Kingdom.	United States.	Germany.	France.
Cotton	42	13	5	5
Wool	6	2	1.5	3
Flax and Jute	1.5	—	0.5	0.7
Silk	1	—	0.1	1.2

Paper is made from a number of *vegetable fibres* by a process of pulping; only linen rags were formerly employed, but other materials are now most largely used, e.g. woollen and cotton rags, wood, straw, and esparto grass, or *alfa*, specially grown and imported from Spain and northern Africa. The chief paper manufactories are in the United States, the United Kingdom, and Germany. The material is often employed not only for writing, printing, wrapping and decorative purposes, but in the form of *papier-maché* as a substitute for wood in many branches of construction.

Gums and resins exude from trees, and are collected for use as drugs, dye-stuffs, or tanning material; *Gum Arabic*, *Gum Tragacanth*, *Camphor*, *Cutch*, and *Benzoin* (used for incense) are all obtained in various parts of southern Asia or East Africa. The bark of the oak and acorns (*valonia*) are largely used as tanning material in preparing leather, and so is *gambier* prepared from a tree grown in south-eastern Asia. The pine yields **turpentine**, **rosin**, and **tar**, the chief sources being the vast forests of Russia and North America. The juice of certain trees hardens into **india-rubber**, which is chiefly used for making waterproof clothing, and in the form of *ebonite* and *vulcanised rubber*, as a substitute for wood, metal, and leather. Half the india-rubber of commerce comes from the forests of Brazil, and much from Central America, and the west coast of Africa. The islands of the Malay Archipelago yield a similar juice, **gutta-percha**, which in many of its properties is more valuable than india-rubber, and is particularly employed in covering telegraph cables.

Dye-stuffs are obtained from the rope-like roots of the *madder* in Europe, the fermented stems of the *indigo* plant in India and Central America, and from the *log-wood* and other trees of South America. Many of these colouring materials are now obtained artificially from coal-tar, and their importance as vegetable products has become less.

Timber is the oldest material of construction; although no longer used in ship-building, except for small vessels, it

continues in great demand, and the woods of the world are rapidly diminishing. In most European countries, and in India, forests are regulated by Government, and planting is carried on so as to ensure a continuous supply.

Extent of Forests; percentage of country covered.

Japan.	Russia.	Scandinavia.	Canada.	Aust.-Hung.	Germany.	U. States.
49	40	35	33	30	25	24
	Switzerland.	France.	Italy.	India.	U. Kingdom.	
	19	17	13	10	3'5	

The soft northern pines form the chief basis of the timber trade, but large quantities of hard wood from southern forests are also felled and sold. British wood-supplies are drawn mainly from the shores of the Baltic, the neighbourhood of the great lakes of Canada, and the Eastern United States. Ornamental woods, such as walnut, maple, mahogany, for furniture and ship fittings, come from North and Central America, the cedar for pencils almost exclusively from Florida, ebony from the East Coast of Africa, oak and cork from Spain and Portugal. The giant pines of red wood in California, rising to a height of 275 feet, the great kauri-pine of New Zealand, and the magnificent eucalyptus and jarrah of Australia, which grow still higher, all furnish valuable timber. Teak, grown in the forests of India and Indo-China, is the most useful hard wood: it is very largely employed for building purposes in hot climates and for the decks and cabins of war-ships, as it is not attacked by white ants and does not splinter like oak when pierced by a shot.

Synthesis of Organic Compounds. Many of the products which could formerly only be procured from plants can now be manufactured by chemical processes, and there is a general tendency to rely less and less on natural productions in many departments of commerce.

CHAPTER IV. ANIMAL COMMODITIES.

Animals and their natural distribution. Fisheries. Cod and Herring, Oysters, Pearls. Skins. Ivory. Feathers. Whales. Cochineal and lac. Domestic animals, Live-stock. Meat. Dairy produce. Wool. Silk.

Animals convert the energy poured out by the Sun into useful work indirectly by feeding on plants or by devouring other animals which are plant-eaters; and thus they elaborate a number of useful commodities.

Distribution of Animals. The natural distribution of animals over the Earth depends, like that of plants, on the climate, the configuration of the land, and the supply of food. The *fauna*, or native animals, of the old world (Europe, Asia, and Africa), differs from that of the new world (North and South America); but there is a similarity between them, e.g. between the lion and puma, tiger and jaguar, camel and llama, crocodile and alligator, ostrich and rhea. The *fauna* of Australasia is peculiar to itself, containing no large quadrupeds, but only such creatures as the kangaroo, wombat, duckbill, emu, cockatoo and apteryx. As the crowding of population in Europe drove emigrants over the seas they took their familiar domestic animals with them. **Horses** and **cattle**, which are native to Europe and Asia, are completely naturalised in America, roving in wild herds over the prairies and the pampas. **Sheep** and **pigs** have spread and prospered equally, there being now enormous flocks in South Africa and Australia, as well as in America. In Australia the **rabbit**, introduced from Britain, has found so congenial a home and flourished so greatly as to endanger the existence of other grass-eating animals; and a reward of £25,000 was offered by the Government of New South Wales in 1887 for a method of thorough extermination, but the 1800 schemes sent in were all impracticable and the reward was not given.

Fisheries. The distribution of **fish** depends on the depth, warmth, and saltness of the water, and the abundance of food. As a rule the cool

northern seas swarm with immense shoals of a few distinct species, such as the cod, haddock, and herring; while the warm tropical waters harbour a far greater variety of fish but smaller numbers of each. Marine animals are most abundant on the slopes of continental shores, and on shallow Fishing Banks rising up from deep water out at sea. The *Dogger Bank* in the North Sea for **soles** and other flat-fish, and the *Grand Banks of Newfoundland* for **cod** are the most famous. By an international agreement the fishermen of each nation have the exclusive right of fishing within three miles of their own coast; beyond that limit the sea is free to all. Fishermen are exposed to great dangers, especially from sudden storms springing up when the boats are at sea. In most countries there is a Weather Department of the Government which issues warnings by hoisting a signal at every fishing-harbour a few hours before a storm is likely to come.

Estimated Annual Value of Fisheries in million pounds.

North America.	Norway and Sweden.	United Kingdom.	France.	Russia.	Mediterranean Countries.
20	16	12	5	4	4

The **cod**, which is caught on hand-lines and preserved by salting or drying, is a renowned food fish, and yields a valuable medicinal oil from its liver. On the fog-veiled Banks of Newfoundland, where about 5,000 British, French, American, and Norwegian vessels are always at work, the annual catch of cod is worth 4 million pounds. The fish is chiefly exported salted and dried to the Catholic countries of southern Europe and South America, to be eaten in Lent. The Norwegian cod-fisheries near the Lofoten Islands and the French on the coast of Iceland are next in importance. The **herring**, chiefly fished by means of narrow-meshed drift nets from Scottish ports, where $1\frac{1}{2}$ million pounds worth are secured each year, is mainly exported salted to the continent of Europe. The **salmon** is caught in stake-nets or seines at the mouths of rivers, the greatest return being made in Britain and in North America; 25,000 tons are tinned every year on the Pacific coast alone. The **sturgeon** of the Volga supports a large trade chiefly in the preserved roe, called *caviare*, and in isinglass. The **tunny** and **sardine** of the Mediterranean are the most important food fishes of southern Europe. Long lines, which sometimes extend for

5 miles, armed with several thousand hooks baited with mussels, are set off the coasts of Britain for haddock, whiting and flat fish—sole, plaice, flounder, turbot &c., but most of the supply for the market is obtained by the use of the beam-trawl, a large net kept open by a beam 60 feet long, which is dragged over the bottom of the sea. Many kinds of fish have been reared artificially from their eggs, which are often transported successfully from one part of the world to another; for instance from Europe to South America and Australia, where rivers have been stocked with trout and other northern species.

Shell-fish. Oysters and other shell-fish thrive in warm shallow estuaries, and in many countries, particularly in the United States, Holland, and France, they are cultivated and watched over in order to increase the supply. Pearls occur in several shell-fish. There are famous fisheries of the pearl-oyster, worked by native divers on the south coast of India under Government control, and off the north and west of Australia, as well as in the Red Sea, Persian Gulf, and the Gulfs of Mexico and California. The fresh-water mussel yielding very large and lustrous pearls is found in some of the rivers of Europe, chiefly in Scotland, in America, and especially in China, where it grows to an enormous size, and is carefully cultivated, being treated so as to secure several crops of pearls without killing the shell-fish. Pearl shells, from which the iridescent mother-of-pearl is cut, are obtained most largely from the West Australian fisheries, and the material is worked into ornamental articles chiefly in Paris and Vienna. Cowries, small shells used as money in many uncivilised countries, are collected on the shores of the Indian and Pacific Ocean, and are of considerable commercial importance. Lobsters are caught in baited wicker traps, on the north-west coasts of Scotland and Ireland, and in Norway and North America. Sponges are dredged in the deep water of the Gulf of Mexico, the Red Sea and the Mediterranean. Along the margin of the Mediterranean, especially on the African side, many boats

are also employed in dredging coral, the finest kinds of which are worth £120 an ounce.

Skins. Savage tribes satisfy their want of animal food and clothing by hunting and trapping, but the importance of these early branches of industry is steadily diminishing as the number of **wild beasts** decreases. The value of the fur-bearing animals of the north led to the appropriation of Siberia by the Russians and to the original settlement of Canada by the French; and these countries still yield the richest supplies. About 6 million **squirrel** skins are obtained, chiefly from Siberia, every year; the only other wild animals killed in greater number than 1 million annually are the **rabbit** in Australasia and Europe, **hare** in Europe and Asia, **musk-rat** in America, **nutria** in the Argentine Republic, and the **hair-seal** shot on the coasts of Newfoundland, Labrador, Greenland and in the Antarctic regions. The invention of silk hats has greatly reduced the value of the **beaver**, but the **fur-seal**, the skin of which when treated in a special manner yields a rich bronze-coloured fur, is eagerly sought after in the barren islands near the Antarctic and Arctic circles. In Behring Sea the British and United States Governments regulate the trade, and limit the period of the annual slaughter. The **fox**, **wolf** and **bear** are of value for their skin; there is a steady supply from Siberia and America. About 400 **lion** and **tiger** hides are obtained annually in Asia and Africa, and command a high price. London, Nizhni-Novgorod and Leipzig are the great world-centres for the trade in skins. The **hides** of domestic animals, cattle, sheep and horses are used in enormous numbers for making leather.

Ivory is obtained in greatest amount from **elephants'** tusks in Africa, where it is calculated 65,000 elephants are killed every year, and the supply always becomes more difficult to obtain. The Indian elephants are domesticated and yield little ivory. The teeth of the **hippopotamus** in Africa, of the **walrus** and **narwhal** in the Arctic Seas, and the curled tusks of the extinct Siberian **mammoth**

furnish a small and variable supply. The total annual production of ivory is about 1,000 tons, of which more than three-quarters comes from Africa. Its manufacture into billiard-balls, knife-handles etc. is mainly carried on in England, but Dieppe is the centre of the trade in carved ivory.

Feathers. The feathers of the **ostrich** came originally from the wild birds of Africa and Arabia, but the increased supply is now derived from the tame ostriches bred on the feather-farms of Cape Colony, and to some extent in Algeria, the Argentine Republic, South Australia, and New Zealand. The brilliant little **humming-bird** of Central America and the West Indies shares with the larger, but equally gorgeous birds of **Paradise** from the Malay Archipelago the first place for decorative purposes. Commercially the down which the **eider-duck** strips from its breast to line its nest is of greater importance. This is collected on the lonely rocks of Norway and the western islands of Germany and Scotland. Most of the feathers of commerce are obtained from domestic fowls.

Whales. The **right whale** is hunted in the Arctic seas for the bony fringe that lines its jaws (*whalebone*, worth about £2,000 a ton), and for the oil yielded by its blubber. Other varieties of whale, including the great sperm whale of the tropics, are pursued for their blubber. Most whaling is done by American and Norwegian vessels; the fleets that formerly sailed from Dundee, Peterhead, and Hull are now reduced to less than a dozen steamers, and as the right whale has been nearly exterminated, these vessels only pay their way by engaging in seal-hunting also.

Insects. The scarlet **cochineal** dye, made up of the powdered bodies of a little Mexican insect, cultivated also in the Canary Islands, has become of little importance since the development of coal-tar colours. The little **lac** insect causes a secretion of resinous substance on the twigs of trees in India and other tropical countries which is used as *shellac* for making varnishes and sealing-wax, and for stiffening the cloth of which silk hats are made.

Deposits of **Guano**, the accumulated excrement of birds found chiefly in Peru and Chile, are extensively worked to supply fertilising agents; but the supplies are rapidly failing.

Domestic animals which were originally tamed, and afterwards by careful feeding and breeding increased in numbers and improved in quality, are maintained in all civilised communities. The use of animals for transport is referred to in another chapter; the horse, ass, ox, and camel are also employed in the cultivation of the soil and in moving machinery where neither water nor steam power is available. **Horses** are reared everywhere for draught purposes and for the army. In Europe, Russia and Austria-Hungary produce most for export, while Germany has the largest demand. **Cattle, sheep, and goats** are kept for the supply of *milk* and *wool*, and killed for their *flesh, hides, fat* and *bones*; **swine** for their *flesh* and *fat*. **Fowls** of various kinds yield *eggs* while alive, and when killed food and *feathers*; even insects such as the **bee** and **silkworm** are reared and protected to supply honey and textile fibre.

Live-Stock. The amount of live-stock in each country is constantly changing since the improvement and cheapening of means of transport make it economical to breed fewer and finer cattle in industrial regions where grazing ground is scarce, and to import the chief supplies from abroad where land is cheap and pasture abundant.

Million head of Live-stock about 1892.

Country.	Horses.	Cattle.	Sheep.	Swine.
United States (1890)	15	53	44	51
Russia (1888)	21	28	47	11
Argentine Republic (1893)	5	22	80	0·3
Australia (1892)	1·5	11	102	1
India (1886)	1	53	24	—
Germany (1892)	4	17	14	12
United Kingdom (1892)	2	11	33	3
France (1892)	3	13	21	6
Austria-Hungary (1890)	3·5	14	14	9

America and Australia produce most **tallow** and **bones**. About 15 million pounds worth of raw **hides** are brought into Europe every year, chiefly from South America and India, to be tanned and con-

verted into *leather*, along with the great quantity produced on the spot. **Live cattle** are exported in numbers, and have been carried safely on sea voyages of several months, but the danger of introducing infectious diseases makes it necessary to conduct this trade under many restrictions.

Meat may be preserved by rendering it unfit to support the life of the minute germs which produce putrefaction. This can be done by sun-drying (as in the case of *charqui* or jerked beef exported in small quantities from South America), by salting, or by simply lowering the temperature. The germs may also be killed by exposing the meat to a high temperature for a short time, and the meat is then preserved by sealing it up in air-tight tins. Large factories for *tinning meat* are established in many parts of the world, particularly in America. The use of animal food is much more general in some countries than in others, the proportion being greatest in Australia and least in Russia for civilised countries.

Average annual consumption of Meat in lbs. per inhabitant (1892).

Australia.	United States.	United Kingdom.	France.	Russia.
276	120	105	78	48

The Liebig meat company at its great establishment in Fray Bentos, Uruguay, boils down beef into a strong *extract* which contains neither bones nor fibre; and this one company slaughters more than 200,000 cattle annually. Since 1877 the **transport of meat** has been revolutionised by the use of *refrigerating machinery*. Sailing ships, occupying over three months on the voyage, now bring cargoes of fresh mutton from New Zealand to Britain in perfect condition. The meat is either frozen and packed in an icehouse kept at a temperature below the freezing point, or simply kept cool by air which has passed over ice. In the Bell-Coleman process compressed air at the ordinary temperature is allowed to expand into the chambers; in so doing it becomes greatly chilled, and a temperature as low as is desired can be kept up for any time. Until 1877 Holland was the only country sending fresh meat to the United Kingdom. The Australian supply, together with that from New Zealand, was less than $\frac{1}{3}$ of the total in 1882 when the meat trade from the antipodes commenced, and rose to nearly $\frac{2}{3}$ in 1885. In 1893 there were imported into Great Britain 3,900,000 frozen carcasses of sheep and lambs from New Zealand, Australia and the River Plate.

Dairy Produce. The trade in dairy produce, milk, cream, butter and cheese, is usually confined to adjacent countries. **Cheese** and **butter** indeed are brought to Europe from America and even Australia, but butter is being largely superseded by *margarine* or purified animal fat, which is equally palatable and nourishing. **Eggs** of common fowls

are an article of trade; the number of hens in the United Kingdom is so inadequate that 1330 million eggs, worth nearly 4 million pounds, had to be imported in 1892. The chief hen countries of Europe are France, Austria-Hungary, Russia, Italy, Belgium, and Denmark; but China contains more fowls than any other part of the world.

Wool from its value as clothing holds a high place amongst textile materials. The merino-sheep, a native of Spain, yields the finest quality of wool, and this breed has been introduced and acclimatised in Australia, South Africa, and America. (Sheep are clipped once a year, and on being washed, to free it from its natural grease and the salts resulting from the evaporated sweat of the animal, the fleece loses nearly half its original weight.) (The four greatest sheep-raising regions, Australia, the Argentine Republic, Russia, and the United States, produce three-quarters of the world's supply of wool.) (The Angora goat of Asia Minor has particularly fine wool, called *mo hair*, and has been successfully introduced into Australia and South Africa. The Kashmir goat of the Himalayas, the camel in China, and the alpaca in the Andes countries also yield important supplies.

Annual Production of Wool (1891) in thousand tons.

Australia.	Argentine.	U. States.	Russia.	U. Kingdom.	All Countries.
250	170	140	130	70	1,110

The United Kingdom is the greatest wool-manufacturing country, France comes second, and then follow the United States, Germany, and Belgium. The wool after being cleaned is first spun into yarn or worsted and then dyed. Some is exported in this state, the rest is woven, either alone, or mixed with cotton, into cloth of various qualities, such as broad-cloth, tweeds, and flannels.

Silk. Many caterpillars spin a *cocoon* of soft fibrous threads before assuming the chrysalis state, and the cocoons of several wild species (*tussar-silk*) are collected in India, and manufactured into silk, but the Chinese silkworm is the only insect reared for this purpose. It is fed on mulberry leaves, and 1 oz. of eggs when hatched produces caterpillars which devour about 770 lbs. of leaves, and yield about 15 lbs. of raw silk. Like all animals brought up in artificial conditions the silkworm is liable to many diseases; an epidemic which broke out amongst these insects in the South of France in 1851 nearly ruined the silk trade for a time. To restore it a new breed of worms was introduced, and a steady trade is now done in silkworm eggs with China, whence the European supply had been originally derived in the sixth century. Perfect cocoons when unwound and cleaned furnish *reeled silk* of the finest quality; an inferior kind (*spun silk*) is obtained from the floss or outer covering and from the cut or damaged cocoons.

Most of the silk produced in Europe comes from the province of Piedmont in the north of Italy, but Lyons in France is the greatest manufacturing centre of this industry. The manufacture of silk has long been declining in Britain, and as steadily increasing in Germany. The export of raw silk from China equals the entire production of Italy.

Annual Production of Raw Silk in thousand tons (1889).

China.	Italy.	Japan.	India.	Russia.	All countries.
5 (?)	2·5	2·4	1·5	1	13

CHAPTER V. MEANS OF TRANSPORT.

Porters. Beasts of Burden. Caravans. Traction. Roads. Rivers. Canals. Railways. Clearing House. Sea transport. Sailing vessels. Steamers. Navigation. Ship canals.

Porters carrying merchandise for long distances are only employed in places like equatorial Africa, where beasts of burden cannot live, and where there are no navigable rivers or railways. An ordinary man's load is about 60 lbs. This mode of transport is so expensive that the cost of carrying goods 150 miles from Tamatave to Antananarivo in Madagascar is three times the freight charged for the voyage of 8000 miles from Liverpool to Tamatave.

Beasts of burden with packsaddles, carrying from 100 lbs. in the case of a **donkey** to 200 in the case of a **horse** or **mule**, do much of the transport of materials in southern Europe, in Asia, and in all mountainous regions where roads are few and bad. The shaggy **yak** and the mountain **sheep** traverse the shelf-like paths of the Himalayas with loads on their backs. The **llama** has for ages brought the produce of the mines of the Andes down to the sea-coast towns. In the plains of India the **ox** is almost the only transport animal, although the costly and expensive **elephant** is sometimes used.

Caravans. From the earliest times the **camel** has been recognised as the most suitable carrier for hot, arid regions, since it can go several days without water or food. It has recently been introduced from its Asiatic home into the western United States, and into the dry regions of Australia. The camel carries from 300 to 1,000 lbs. weight, but it swings slowly along at the rate of only $2\frac{1}{2}$ miles an hour, covering about 25 miles a day, in two long marches, broken by a mid-day rest. From 40 to 600 camels journey together in a caravan, the gaily-decorated leader being followed in single file by the others linked together in groups by a hair rope. The rough tracks through the deserts are marked by an occasional well in a grassy oasis where palm trees grow; and by the whitened skeletons of camels which have died by the way. Formerly all the silks and spices of the East reached Europe in this way, but the trade is steadily falling off. The chief

caravan routes now are between China and Russia, and through the ancient lands of western Asia. In Africa Arab caravans travel between the North Coast and the central oases of the Sahara. Camels are costly carriers. In 1887 the carriage of liquorice roots by camels from Antioch to Alexandretta (30 miles) cost 32s. per ton; while from that port to New York (6,000 miles) the freight by sailing ship was only 13s. per ton.

Traction. Animals can *pull* more than they can carry. **Sledges** are used in the far north, where the flat ground is covered smoothly with snow or ice during most of the year. Where there is no vegetable food, as in Greenland and northern Canada, **dogs** are the only animals available, and a team of 12 Eskimo dogs can drag nearly half a ton on a sledge for eight hours a day. Where the coarse moss of the plains can be reached under the snow in winter the **reindeer**, which is able to run 100 miles a day over the snow with a sledge, is used for transporting merchandise. Throughout Russia and all countries of the northern continents horse sledges, or sleighs, are used in winter, when snow transforms the whole country into a highway, or frozen rivers form smooth roads through the forests. On the trackless plains of South Africa, central Australia, and America, **bullock-waggons** drawn by from 2 to 40 oxen form the caravan of the trader, in which he travels and sleeps. **Camels** are also used for traction in Australia.

Roads connect all the important places in civilised countries, crossing rivers by bridges and winding through the valleys and passes of mountain ranges. In mountainous countries viaducts and tunnels are often necessary, and sometimes the whole pathway has to be hewn out like a shelf or groove along the face of a precipice. The highest carriage-road over the Alps crosses the Stelvio Pass 9,000 feet above the sea; in the Andes and Himalayas roads ascend in some cases to the height of 15,000 feet or more above the sea. In good roads the greatest gradient should not exceed 1 in 30, that is the steepness should not be more than a rise of 1 foot in every 30 feet traversed. A succession of gentle undulations is better than perfect flatness. The old Roman "streets," which still stretch across many parts of Europe, were solidly paved with stone like the streets of modern towns. For centuries after the Romans, roads were mere cart tracks, but since the time of Macadam, a hundred years ago, high roads have been formed of a hard-beaten arched covering of "metal" or broken stones, from which the rain runs off freely toward either side. **Wheeled vehicles** drawn by horses carry most of the traffic on European roads. The average load of a horse in a two-wheeled cart is about 1 ton; in a light four-wheeled waggon, where none of the weight falls on the animal, it may draw $2\frac{1}{2}$ tons on a level road, 30 times what it can carry; thus in going up a hill of 1 in 30 it exerts twice the ordinary strength, and in going down the same hill requires to do no work at all. Cart traffic is carried on in China to an enormous

extent, as many as 2,000 country carts loaded with farm produce have entered Newchwang in a single day. Old-fashioned inns with immense ranges of stables standing deserted in wayside villages in England still recall the time when stage-coaches, post-chaises, and carriers' waggons bore the inland traffic. Dogs draw small carts on the Continent, but their use in the United Kingdom is prohibited. In China a light wheelbarrow is extensively employed for goods or passengers, drawn by a man, who is assisted in a favourable wind by a sail hoisted on a mast. The tricycle, also utilising human power, is very popular in the level towns of England for delivering parcels and carrying light goods.

Rivers are natural channels for distributing heavy merchandise, especially when the plain part of their course is long, and the climate keeps them free from ice and full of water during most of the year. In wooded countries trees felled in the forests during winter and dragged to the nearest stream are carried along by the Spring floods, and brought down in rafts, sometimes for hundreds of miles, to the sea. Boats and barges laden with produce of the field or the mine float down the great continental rivers, and either return up stream with a new load drawn by horses or propelled by sails, or else, as in Russia, are broken up for fuel at their destination. When a river, flowing gently along a level plain, enters a tidal sea the rising tide reverses the current for many miles. In the Thames, for instance, crowds of loaded box-barges drift clumsily up to London with the flood tide, incurring no expense whatever for carriage; and during the ebb they whirl and jostle down again with other cargoes, bumping against bridges and vessels as they pass. Steamers now ply on all the great rivers and lakes of the world. Very light-draught steamers, some carrying several hundred tons but floating in 18 inches of water, navigate shallow tributaries. In some rapid streams vessels draw themselves along by means of a chain laid in the river-bed.

Canals. A horse can draw as much as 100 tons in a barge on still water, hence when canals can be constructed they are of great service for transporting heavy goods. A canal must be on a dead level, all valleys being bridged by aqueducts and all hills either avoided or tunneled. On account of irregularities of country, canals are usually made in successive level lengths, at different elevations, the barges being transferred from one level to another by locks, or hauled up inclined planes by steam power, or lifted vertically by a powerful hydraulic ram and then launched on the higher reach.

Railways worked by steam locomotive engines succeeded canals, a fact perpetuated in the name *navvy*, a contraction of navigator. A railway is a road, made in as easy curves and as level as possible, carrying parallel rails of iron or steel for the carriage wheels to run on. In flat countries railways are carried directly between the towns they are to connect, but in hilly regions they require to follow the natural

valleys and passes, usually along rivers, and frequently to tunnel mountains. Early railways had **gradients** no greater than 1 in 300, but gradients of 1 in 80, and often steeper, are now common, as the power of locomotives has been much increased. The most important **tunnels** in the world are those piercing the Alps and connecting northern with southern Europe, the longest of them, that through the Great St Gothard, measures $9\frac{1}{4}$ miles. The longest tunnel in the United States is the Hoosac, $4\frac{3}{4}$ miles, and in the United Kingdom that opened in 1886 under the Severn, which measures $4\frac{1}{2}$ miles. The longest railway **bridges** yet built are one over the Tay, 2 miles in length, with 85 spans of wrought-iron girders, one over the Oxus in Central Asia, and one over the Mississippi near New Orleans; but the Forth bridge at Queensferry is the largest ever attempted: its length is $1\frac{1}{2}$ miles, mainly in two enormous spans 150 feet above the water, and it is built entirely of great steel tubes.

Iron **rails** were formerly used, but steel is now almost exclusively employed. British rails are double-headed and can be turned when one face is worn; they are wedged into iron *chairs*, which are fixed by spikes to heavy cross beams known as *sleepers*. In America the rail is made with a flat base spiked direct to sleepers placed at close intervals. The **gauge**, or distance at which the two rails are fixed, varies; but 4 feet $8\frac{1}{2}$ inches, the standard in Great Britain, is used on eight-tenths of existing railway line. The northern and southern States of the Union had formerly different gauges, as a political precaution in case of war, that of the south being 5 feet; but on June 1st, 1886, a change was made simultaneously on 13,000 miles of line, one rail being shifted $3\frac{1}{2}$ inches to become uniform with the standard gauge of the north. In April 1892 the gauge of the Great Western Railway from London to Plymouth and Penzance was altered from 7 feet to the standard in a single day. A **single line** of rails usually runs through thinly peopled districts, places for passing being provided here and there. Busier railways are **double**, and some have three, or even four lines, as on the London and North-Western for the 80 miles between London and Rugby.

Goods traffic is usually carried on in the United Kingdom by trains of less than 40 waggons, weighing altogether about 700 tons, and travelling at 20 miles an hour or rather less. In the United States heavier and longer trains are run. Passenger trains often attain speeds over 60 miles an hour, but the average for a long run very rarely exceeds 50, and 35 is common. This fast service can only be maintained safely by strict attention to signals, and is best attained by the **block system**, which allows only one train at a time on any section of the line. **Continuous brakes**, worked by the pressure of air, checking all the wheels of a train at once, greatly add to the security.

Special railways have been designed for particular places, such as the toothed-rail lines that climb the Rigi and Mount Washington, the

combination of toothed and ordinary rails on the Zermatt and the Pikes Peak lines, the funicular or rope railways on many Swiss mountains, the Metropolitan system in London, which has been mainly tunnelled under the streets and houses, the elevated rail-road of New York, a continuous bridge running along the middle of the street, and the Lartigue one-railed line in Kerry, on which the engine and carriages balance like clothes-pins on a rope. Steam traction is generally employed, although electricity is beginning to come into use as a motive power. Railways depend on a constant supply of **fuel**, which is usually coal or coke, but sometimes wood, peat, or petroleum.

Clearing House. In Great Britain there are numerous railway companies the lines of which are in communication so that trains of each company may pass over the whole system. The payments to be made by each company to the others for the use of their rails necessitate a very complicated system of accounts, and to facilitate working a **Railway Clearing House** has been established, to which all particulars of the carriages of other companies running over each line are sent. Ultimately a single payment only has to be made or received by each company representing the balance of its debtor and creditor account with all the others.

Fluid commodities, such as oil, water, sugar-cane juice, and gas, are transported through **pipes**; some Pennsylvanian petroleum pipe-lines are over 300 miles in length.

As a means of communication the **electric telegraph** is of inestimable value to commerce; and without instantaneous communication between remote places the railway system could never have attained its present stage of development. The **telephone** in large towns is also of great service.

Sea Transport. Three-quarters of the Earth's surface can never be touched by roads or railways, and the command of the **sea** is essential in the conduct of trade, far more material being carried from country to country, even from one part to another of the same country, by sea than by land.

Sailing vessels can if they have time and plenty of sea-room make progress even against the wind; but for a rapid passage the wind must be favourable. By taking advantage of such permanent winds as the trades and the "roaring forties" they are able to accomplish their voyages with great regularity. In the passage from England to New Zealand and back, a sailing ship goes by the Cape of Good Hope with a fair wind all the way, and returns by Cape Horn driven by the same steady breeze. The size of the ships employed in foreign trade has recently been greatly increased, and steel is employed in their construction in place of wood or iron. To make a successful passage with a vessel of 4,000 tons burden dependent entirely on wind and currents for her motion requires a good knowledge of the principles of navigation,

the laws of storms, and the physical geography of the oceans on the part of the captain. The building of sailing ships, after declining for many years while that of steamers increased rapidly, has recently begun to revive.

Steamers. The superior regularity and speed of steamers which, except when unseaworthy or overladen, are almost independent of wind and weather, is of great importance in commerce. **Paddle wheels** turned directly by the engines are now confined to river steamers and those making short sea passages. The **screw propeller**, universally employed for ocean-going vessels, is fixed in the stern of the ship, and turned by a shaft running through the vessel to the engine-room. Triple-expansion engines, where the steam is used over again three times, and twin screws, each with its own engines, by means of which the ship may be turned in the same way as a person turns, and nearly as rapidly, are improvements of recent date; and now ocean steamers compete in speed and security with railway trains, some of the Atlantic "greyhounds" averaging a velocity of considerably over 20 miles an hour. The largest passenger steamers, the "Lucania" and "Campania," have a measurement of 12,950 tons register; 5,000 ton steamers are common, but the average tonnage of British ocean-going steam-ships (1892) is 1,400; the crew averages 35 men. The **register tonnage** of a vessel is the space available for cargo; the ton measuring 100 cubic feet.

Fuel. Steamers burn coal as a rule, but petroleum is coming into use, while in forest countries like Canada wood is the chief fuel. **Coaling stations** have been established in all parts of the world, where cargoes are stored and supplied to steamers on their voyages. The speed with which coal can be put on board is important; it varies from a few tons an hour in ocean islets where men or women have to carry it in bags, to 300 tons an hour with hydraulic tips in modern docks.

A steamer has three and a half times the **carrying power** of a sailing ship of the same tonnage, because it can make each voyage in less than a third of the time.

Tonnage of sea-going Merchant Ships, 1891—92.

		U. Kingdom.	Germany.	U. States.	France.	Norway.	Italy.
Sailing	(million tons)	3·6	0·6	1·5	0·3	1·4	0·6
Steam	,,	5·4	0·8	0·4	0·5	0·2	0·2
Carrying power	,,	22·5	3·4	3	2·2	2·1	1·3

Navigation. In mid-ocean the chief risk is that of collision with an iceberg or another vessel. At night all vessels are required to carry a powerful green light on the right (starboard) side, and an equal red light on the left (port) side, while steamers must also have a white light

on the mast. When two vessels meet, the rule of the road is as on land¹ to keep to the right. The rule for passing by night runs in the sailor's rhyme

"Green to green, or red to red
Perfect safety, go ahead!"

At sea the **position** of a vessel is found every day by astronomical observations with the sextant for latitude, and by the chronometer for longitude, and the shortest **course** can be calculated from the chart, and pointed out by the compass. This is not always the quickest course or the one adopted, as it is sometimes advisable to keep out of the straight track to avoid ice, or to secure the help of a favouring wind and current. Near land great caution is necessary to avoid rocks and shallows. The coast of every country in the world has been surveyed, chiefly by British men-of-war, and **charts** are issued by the Admiralty showing the depth of water at every place, and the position of all rocks and banks. In narrow river-mouths ships usually employ pilots, who know the place thoroughly and can steer through the most intricate channels. **Buoys** or beacons mark out the safe passages or give warning of dangerous places, and by night lighthouses, each distinguished from all others by the colour of its light, or the way in which it revolves or flashes, act as guides. The possession of good **harbours** is essential to the commercial success of a country; but although splendid natural havens like Plymouth Sound and Port Jackson exist in many parts of the world, most ports have been made useful by dredging and building breakwaters, and must be maintained at a great expenditure of money.

Ship Canals exercise an important influence on trade by stimulating commerce, altering routes and shortening distances. The Suez Canal reduces the sea-distance between Plymouth and Bombay from 12,000 to 7,000 miles, and has diverted an immense amount of shipping from Cape Town. The isthmus of Corinth is severed by a ship-canal. A canal across Central America would, if completed, have a similar effect with regard to shipping round Cape Horn. The ship-canal between the Mersey and Manchester admits the largest vessels to that inland town 35 miles from naturally navigable water.

¹ In some countries, e.g. the United Kingdom and Colonies, and in Hungary, this rule on land is reversed for riding or driving, the rider keeping to his left on passing another, but the rule for foot-passengers and for sea traffic is universally "Keep to your right."

CHAPTER VI. PEOPLE AND COMMERCE.

People and Density of Population. Migrations. Forms of Government. Consuls. Languages. Weights and measures. Coinage. Time. Postal Union. Chief Commercial Countries.

THE population of the world, which is estimated at 1500 million, is very unequally distributed, about one-half being spread over the vast continent of Asia, and one-quarter crowded into Europe. Those parts of the world where the density of population is greatest would be of the chief commercial importance if there were no natural or artificial obstacles in the way of trade; but in densely peopled regions which are purely agricultural, such as the great plains of India and China, the people as a rule must give all their energy to raising the bare necessaries of life from the soil, and are too poor to purchase many foreign goods; or they may be shut out from European influence by the trade policy of the empire, and by their own habits and prejudices.

Migrations. The races of mankind inhabiting the **north temperate zone** are first both in civilisation and in numbers, and amongst them the people of western Europe are at present the most advanced, most energetic, and exert the widest influence on the world at large. They have spread from all north-western Europe—but principally from the United Kingdom—over North America, where their enterprise and business capacity has been stimulated to a yet higher point. From south-western Europe, chiefly Spain, they overran South America, supplanting and partially blending with the native races, but on the whole becoming less persevering and law-abiding than when in Europe. In Australia and South Africa settlers from north-western Europe have also found congenial homes, where their energies are unimpaired, and it is possible that some of the high plateaus of Central Africa may become peopled by Europeans. In tropical lands near sea-level Europeans cannot become permanently settled on account of the climate.

In colonies of Europeans and in Europe **industrial areas** are always the most, and agricultural regions the least, thickly peopled, so that a map showing **density of population** suggests roughly the occupations of the inhabitants. This rule does not apply to the old and populous agricultural states of Asia.

Forms of Government. There are two characteristic forms of government amongst mankind, the *monarchical* and the *republican* or democratic. **Monarchies** are of three kinds, (1) *Despotic*, like those of some barbarous peoples, where the will of the chief is their only law, (2) *Absolute* or autocratic, where as in the case of Russia the people are governed by laws they had no share in making, (3) *Limited*, in which the monarch is the nominal head of the state, with more or less administrative power, but the laws are made and, in great measure, administered by **representatives** elected by the people. This is the common form of government in western Europe, and in the United Kingdom differs from the republican chiefly by the fact that the monarch inherits the position and is not elected. **Republics** are presided over by a president who is elected by the people, and exercises all the powers of a king when in office. The laws are made, as in limited monarchies, by elected representatives. In some republics, such as Switzerland and the United States, many states, each with a local representative government, are combined into one nation for foreign affairs and the management of external trade. The more important **British Colonies** exercise democratic rights under the nominal control of a governor elected by the home government.

The system of **tariffs** in each country and the restrictions imposed on trade are continually being changed, and are no more favourable to international commerce in republics than in monarchies. **Commercial treaties** are often concluded between two nations, in which certain privileges and exemptions from the ordinary tariffs are conceded on both sides for a stated time. If such a treaty contain a *Most Favoured Nation Clause* the contracting

parties will, while it lasts, participate in any increased concessions which either may subsequently make to any other power.

Consuls are appointed by all maritime nations in the principal foreign ports in order to watch over the interests of their fellow-countrymen, who in most despotic and some absolute monarchies are amenable to the law of their own land administered by the consul. The consul has also to report on the commercial condition of his neighbourhood; the *Consular Reports*, published at a nominal price by the British Foreign Office through Messrs Eyre and Spottiswoode, are most valuable works on commercial geography; and those of the United States are no less useful.

Languages. Many different languages and dialects are spoken by the inhabitants of the world, but few are wide-spread; the extent of the most important being estimated thus:—

Million Persons speaking the chief Languages.

Chinese.	English.	Russian.	Hindi.	German.	Spanish.	French.
400	120	100	90	60	48	46

French is very widely diffused, and is the official language of all Governments in international deliberations.

Weights and measures. The metric system is more generally used than any other, and next to it the confused British system which prevails in the British Empire and the United States; the “short ton” of 2,000 lbs. is often used in America, the “hundredweight” there is reckoned as 100 lbs., and the American gallon is only 0.83 of the British imperial gallon. It is convenient to remember the following approximate values of the chief metric measures:—

Kilogramme	= 2½ lbs.	Hectolitre	= 22 gallons.
1015 ,,	= 1 ton	,,	= 2¾ bushels.
Litre	= 1¾ pints	Hectare	= 2½ acres.
Metre	= 3 ft. 3⅓ in.	Sq. kilometre	= ¾ sq. mile.
Kilometre	= ⅔ mile, or 8 kilometres = 5 miles.		

Coinage. The exchange value of the coinage of various countries changes from time to time, and in consequence of the depreciation of silver serious difficulties occur in transactions between nations using gold and those using silver as a standard, e.g. between the United

Kingdom and India. Sometimes there is a paper currency which has become depreciated, and although nominally worth the amount printed on the notes (the face value) is only accepted as equivalent to a much smaller amount in gold or silver: but in most countries the paper money, either as **bank-notes** or notes issued by the State, is accepted for all purposes of internal trade as fully equivalent to coin.

Time. In telegraphing to distant parts of the world it is essential to remember the difference in time. The standard time used in each country varies, but is frequently that of the chief astronomical observatory, which is usually in the capital, such as Greenwich, Paris, Berne. Every 15° difference of longitude makes 1 hour difference in time; for places in west longitude the hour is *before* that at Greenwich, for places in east longitude *after* it. Thus at Greenwich noon it is 7 a.m., at New York (75° W.) and 5 p.m. at Bombay (73° E.). By the general agreement of all nations, except France, the *Prime Meridian* or zero of longitude is that of Greenwich, and this is now employed on American and German as well as British maps. The hour-zone system of time reckoning in which the time is changed by steps of 1 hour from Greenwich is rapidly gaining ground. It was first introduced in North America (see United States) and later in Europe, where France is the only important exception. Greenwich time is the standard in Great Britain, Belgium and Holland; "Central Europe time," one hour later, is used for the railways of Scandinavia, Germany, Switzerland, Italy and Austria-Hungary; and "Eastern European" time (2 p.m. at Greenwich noon) for Russia and the Balkan States. Japan has also adopted the system and it is spoken of for Australia.

The **Postal Union** provides that all the countries entering it have a uniform rate of foreign postage, except in cases, such as the United States and Canada, where cheaper international rates exist. It includes practically all civilised countries, the uniform rate being $2\frac{1}{2}d.$ per half-ounce for letters.

The Chief Commercial Countries, the relative importance of which may be measured by the value of their **total trade**, that is the value of all their imports and exports taken together, are six in number. They fall into three groups, in the first of which the United Kingdom stands alone, doing twice the trade of any other. In the second group Germany, France and the United States are practically equal, and the third contains Holland and India, the only remaining countries the total trade of which exceeds or approaches 100 million pounds sterling per annum.

Total Trade of principal countries in million pounds sterling.

	U. Kingdom.	Germany.	France.	U. States.	Holland.	India.
1861-65	310	290	110	100	60	80
1886-90	630	330	300	300	150	120

PART II.

THE COUNTRIES OF THE WORLD.

CHAPTER VII. THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND.

Coasts. Surface. Climate. Agriculture. Live Stock. Fisheries.
Coal. The seven chief coal-fields. Metals. Minerals. Manu-
facturing Towns—textiles, machinery. Canals. Railways. Shipping.
The five chief Sea-ports. Imports and Exports. People. Trade-
restrictions. Defence.

Coasts. The British Islands separate the shallow North Sea from the Atlantic Ocean for 700 miles. The south-eastern corner of Great Britain (at Dover) comes within 21 miles of the continent of Europe; the coast however inclines toward the west, and from Hull northward the North Sea is about 300 miles wide. Only two inlets of the east coast—the **Cromarty Firth** and the **Firth of Forth**—form harbours that a ship can enter in a storm without a pilot; the great estuaries of the **Ness**, the **Tay**, the **Humber** and the **Thames**, are very shallow, full of shifting sand-banks, and can only be entered by experienced pilots. The south coast of England and the coast of Wales have many fine natural harbours, such as **Southampton Water**, **Plymouth Sound**, **Falmouth**, and **Milford Haven**. Wide shallows and bars obstruct the ports of the north-west of England and the east of Ireland; but many deep narrow inlets wind inland for miles on the west coast of Scotland and the west and south of Ireland. Ships

are warned and guided at night by **lighthouses** on promontories or sea-girt rocks round the islands and by **light-ships** anchored off the dangerous sand-banks and sunken rocks of the coast. All channels and harbour entrances are marked by floating **buoys** or fixed **beacons**. Most of the harbours are accessible to shipping only for a few hours twice daily when the rising **tide** increases the depth of water by from 8 to 20 feet.

Surface. Great Britain is divided from north-east to south-west into zones which differ in physical character. The sterile Scottish **highlands** of ancient crystalline rocks are succeeded by the fertile soil and coal deposits of the **lowlands**; these are followed by the grassy southern **uplands** which extend as the Pennine chain through the centre of England to Derbyshire, with coal, iron, and limestone cropping out on the slopes. **Mountains** of ancient rock containing metallic ores occupy Wales, and similar rocks extend to the peninsula of Cornwall and Devon. All the rest of England is an undulating **plain** crossed by lines of low limestone or chalk or sandstone hills, and composed toward the south-east of successively newer deposits which form a more and more fertile soil. The eastern **rivers** are as a rule longer and slope more gently than those of the south and west; they are consequently larger, less rapid, and more easily navigated.

Ireland consists of a **central plain** of rich grass land with many bogs and wide shallow lakes. This is surrounded by a broken rim of mountains which yield fine granite on the north and west, and various metallic ores, including copper, in Wicklow on the south-east.

British **Climate** is the most equable and favourable for industry in the world. The latitude, between 50° and 60° , ensures a period of daylight of about 17 hours in mid-summer and 7 hours in mid-winter. The warm water of the Gulf Stream and the **south-westerly winds** which blow most of the year bring mild weather, outdoor work and traffic being rarely stopped unless for a day or two by an exceptionally severe snow-storm. This *oceanic climate* contrasts strongly with the severe *continental climate* of inland places in the same latitude. Ireland and

the west of Great Britain have the warmest winter and coolest summer weather, the cloudiest sky, and the heaviest rainfall; while the east of England, which receives the west winds after most of their moisture is deposited, is dry and bright, the coldest part of the country in winter and the hottest in summer. Yet because the ground is more level on the east and usually more clayey in its character the smaller rainfall remains longer on the land and is as effective for agriculture as the heavier rainfall on the steeper slopes of the west.

Agriculture. The area of the United Kingdom is a little over 120,000 square miles or 78 million acres; but about one-third of this is occupied by the mountains of Scotland and Wales, and the bogs of Ireland, which cannot be cultivated on account of poor soil and inclement climate. In *Scotland* the narrow strip of low ground along the east coast from Caithness to Berwick is highly cultivated, and the margins of the firths are as fertile as any land in the kingdom; oats and barley form the chief crops, and oats also grow in *Ireland*, where the moist climate makes other grain unprofitable. Wheat requires rich soil, abundant summer sunshine, and little rain, in order to ripen well. These conditions are not found in Ireland; in *Scotland* they only occur on the coasts of the eastern firths; but most of *England* fulfils them perfectly, especially in the eastern counties. The farms of Lincolnshire, Yorkshire, and Essex produce one-fourth of all British-grown wheat, and the yield sometimes approaches 40 bushels an acre, the average for the whole country being over 30. The cheapening of foreign wheat has reduced the area in the United Kingdom under this cereal from 4 million acres in 1867 to 1.9 million in 1893. Potatoes, grown chiefly in *Ireland*, and turnips are the staple root crops. Market gardening is of importance in the neighbourhood of large towns; apples are particularly cultivated in the southern counties, while strawberries, gooseberries, and other fruits are receiving increased attention in all parts of the country. On account of their mild climate the Scilly Isles have acquired great importance for the production of early vegetables and cut flowers. Steamers connect at Penzance with the Great

Western Railway. **Flax** covers a considerable area in the province of Ulster and in Yorkshire, and **hops** are grown in Kent and Sussex. Attempts made to introduce tobacco, beetroot, and other industrial plants have never succeeded. Large farms and the extensive use of machinery in cultivation are necessary in order to obtain paying crops from the soil. Village blacksmiths have now more to do in repairing reaping machines than in shoeing horses, and large implement manufactories have arisen in the farming centres.

Thousand Acres under Chief Crops in 1893.

	Pasture Grass.	Oats.	Turnips.	Barley.	Wheat.	Potatoes.
Great Britain	21,060	3,170	1,970	2,070	1,900	530
Ireland	12,470	1,250	300	160	50	720
United Kingdom	33,530	4,420	2,270	2,230	1,950	1,250

Live Stock. More than half the cultivable land of the United Kingdom is permanently under grass for **pasture**, and in Ireland more than two-thirds; cattle, dairy produce, and pigs being the staple exports of CORK (75) and other Irish ports. The breeds of English **cattle** are unrivalled for size and weight, as English **horses** are for strength, endurance, and beauty. Most cattle are found in the central counties of England, **sheep** predominate on the chalk and limestone wolds and downs of the east and south, and in Scotland on the southern uplands, especially the Cheviots, and on the highland mountains of Argyll.

Thousand Head of Live Stock in 1893.

	Sheep.	Cattle.	Pigs.	Horses.
England	16,800	4,740	1,790	1,170
Scotland	7,370	1,220	120	200
Ireland	4,420	4,460	1,150	550
Wales	3,100	740	200	150
United Kingdom	31,770	11,210	3,280	2,080

In spite of this large animal population about 100,000 live sheep and 500,000 cattle are imported every year, as well as immense quantities of dead meat. (See p. 46.)

Fisheries. Every sea-side village contains some fishermen, but the great fisheries of the country are concentrated in a few places. Fleets of sailing smacks from HULL (200), GRIMSBY and YARMOUTH trawl all the year round on the *Dogger Bank* and over the *North Sea*, sending in the catch daily by special fast steamers to LONDON, where *Billingsgate* is the largest fish-market in the world. Supplies are sent by rail in ice to all parts of the country. PLYMOUTH is the centre of the *South coast* trawling and mackerel fishing. Cod fishing is carried on round the *Shetland Islands*, and on the distant *Rockall Bank* by welled smacks which bring back the fish alive to GRIMSBY or HARWICH, where they are kept until wanted in half-submerged boxes. The herring fishery gives periodic employment to several thousand large boats, YARMOUTH being the head-quarters in England, the *Clyde lochs*, STORNOWAY, WICK, FRASERBURGH, PETERHEAD, and ABERDEEN (120) the chief centres in Scotland. Herring fishing commences in April at STORNOWAY, moves round to the east coast, advancing with the season, and ends in November at YARMOUTH. Government officials mark all barrels of herring cured at Scottish ports with a brand certifying the quality; and in virtue of this the barrels are accepted in foreign markets unopened. Pilchard fishing occupies several ports in *Cornwall* and *Devon*, the fish being preserved in oil like sardines at ST IVES. Salmon are captured in the tidal waters of the *Spey*, the *Tay*, the *Tweed*, the *Severn*, and other rivers, and in the neighbouring sea. Oysters are cultivated at WHITSTABLE and other coast towns of the Thames estuary and at many sheltered places round the coast. The fisheries in Ireland, where DUBLIN (360) and KINSALE are the head-quarters, are little developed on account of defective means of transport. Scotland and England each give employment to about 50,000 fishermen; Ireland, with a larger sea-coast than either, to only half that number. More than 30,000 tons of ice from Norway are imported at HULL for the fish trade every year. At herring curing stations there is a constant demand for salt, and

great activity in making barrels and in cleaning and packing the fish.

Coal. The quantity of coal raised in the British Islands steadily increased from 64 million tons in 1855 to 185 million tons in 1891. At this rate of production it is calculated that all the available British coal will be exhausted in 600 years. About 30 million tons are exported, the rest being consumed in the country for manufacturing and household purposes. Ireland produces only about 100,000 tons a year and depends on Great Britain for her coal supply. To the south-east of a line drawn from the mouth of the Severn to the Wash no coal appears on the surface, but deep borings near Dover have succeeded in proving the existence of coal at a depth of 2000 feet, and it is probable that it will ultimately pay to work it. At present there are no large towns not sea-ports or suburbs of LONDON on the region where no coal is worked, while large towns maintaining great manufactures are very numerous on the coal-fields. The 20 coal-fields of Great Britain may be grouped in six districts where 660,000 people are employed in working the mines. The coal production noted below is that for 1892 when the whole produce of the country was 181 million tons.

a. **The Yorkshire Coal-field** on the eastern slope of the Pennines, and extending into Derbyshire and Nottingham, produced about 42 million tons. The mines are not well situated for shipping, and most of the coal not used in the multifarious manufactures of the district is sent by rail to LONDON. SHEFFIELD (330), the historical steel-city, is in this region; but the multitude of towns and villages engaged in the woollen trade clustering round LEEDS (370), BRADFORD (210), HUDDERSFIELD (95), NOTTINGHAM (210) and DERBY (95) justify the name of *The Woollen Coal-field*.

b. **The Northern Coal-fields** in Northumberland and Durham produce 33 million tons a year, much of which is shipped at the ports of the *Tyne, Wear, and Tees* to all parts of the world, but most is consumed in the iron-works

and ship-yards of NEWCASTLE (190), SUNDERLAND (130), HARTLEPOOL, and MIDDLESBOROUGH.

c. **The South Wales Coal-fields**, in Glamorgan, Monmouth, and adjacent counties, are specially valuable for their supplies of **anthracite**, the only fuel used in brewing, much being carried by canal to BURTON-ON-TRENT for this purpose. The towns in the Rhonda valley, especially YSTRADYFODWG, are increasing rapidly in size on account of the coal production. Of the 30 million tons of coal and anthracite produced, nearly half is exported to foreign countries and coaling stations from NEWPORT, CARDIFF (130), BARRY, and SWANSEA (90). The iron-works of MERTHYR-TYDVIL, the copper-smelting of SWANSEA, and the manufactures of CARDIFF depend upon this supply.

d. **The Scottish Coal-fields**, scattered over the Lowlands, produced 27 million tons. Those of Lanarkshire and Ayrshire supply the manufactories of GLASGOW (620), the ship-building ports of the *Clyde*, the iron-works of the HAMILTON and CUMNOCK districts, and the north of Ireland. Fifeshire supplies the industrial towns of the east of Scotland and exports from the Firth of Forth to the Baltic; the Lothians send coal to EDINBURGH (260) and LEITH, and are rich in **oil-shale**, $1\frac{3}{4}$ million tons of which are annually distilled for paraffin oil and wax.

e. **The Lancashire or Cotton Coal-field** yielded 22 million tons, most of which is used on the spot in the most densely peopled and industrious part of England. Lines of great brick buildings, bristling with tall chimneys and vibrating with the whirr of spinning frames and power looms, cover hundreds of square miles, condensing here and there to form large cotton-trading towns such as MANCHESTER (with SALFORD 700), OLDHAM (130), BOLTON (110), and BLACKBURN (120). Iron furnaces, engine shops, chemical works, and ship-yards line the shores of the *Mersey* and *Ribble*, giving employment to many busy towns.

f. **The Staffordshire Coal-fields** are small and

scattered, with an output of 14 million tons. Mines in the north of the county supply the *Potteries* round STOKE-UPON-TRENT. Those in the south sustain the iron-manufactures of the *Black Country*, where the sky is darkened by day and lighted at night by innumerable furnaces, the air filled with the clang of hammers, and the bare cinder-strewn ground traversed by a network of triple or quadruple railway lines and narrow canals of black stagnant water. The manufacture of metals concentrates in BIRMINGHAM (430), WOLVERHAMPTON, WALSALL, and COVENTRY. This is the coal-field nearest LONDON, whither supplies go by rail and canal.

g. There are small **isolated Coal-fields** in *Cumberland*, *North Wales*, at *Coalbrookdale* in Shropshire, the *Forest of Dean* in Gloucester, and, farthest south, near BRISTOL (220), where the coal-mines are the most difficult to work. Together they produce about 13 million tons.

Metals. Ores of **Iron**, in the form of the common *clayband* and rarer *blackband*, are frequently found in the same mines as coal, and most of the iron manufacturing districts have been referred to in speaking of coal-fields. MIDDLESBOROUGH owes its prosperity entirely to the clay-ores of the *Cleveland* hills, and the port of BARROW has rapidly risen in importance on account of the much more valuable *red hematite* of Cumberland and North Lancashire. In 1886 14 million, but in 1892 only 11 million, tons of iron ore were raised in Britain. Between 3 and 4 million tons yearly are imported from abroad. From all sources 7 million tons of **pig iron** are manufactured, one-third of which is afterwards converted into **steel**. There are nearly 1,000 blast-furnaces for producing pig-iron from the ore, but of these only 400 have been at work in recent years. **Tin** ore is only mined in *Cornwall* and *Devon*; **copper** occurs along with it, but the quantity raised is now very small. The large supply of imported copper ore is smelted exclusively in the neighbourhood of SWANSEA and WIDNES. **Lead**, with **silver**, is extracted at *Leadhills* in Lanarkshire,

in the *Wicklow* mountains, in *Cumberland*, Wales, Northumberland and in some other places. **Zinc**, obtained mainly in Northumberland and North Wales, is frequently mined along with lead. A small quantity of gold is also obtained, chiefly in Wales.

Other Minerals. **Slates** are obtained from Wales, chiefly at LLANBERIS and FESTINIOG, from Westmorland, and parts of Scotland; **paving stones** from THURSO in Caithness and from Forfarshire. **Granite** from the old rocks of Scotland, Ireland, and the west of England, is used for building, but the various kinds of **limestone** and **sandstone** are more largely quarried. **Clay** for *brick-making* is most abundant in the south-eastern counties, and **china-clay** is sent in great quantities from the decayed granites of Cornwall and Devon to the Staffordshire *Potteries*. **Salt** is manufactured mainly in Cheshire from the rock-salt mines about NORTHWICH, and in Worcestershire at STOKE and DROITWICH.

Mineral Production of the United Kingdom.

	Amount, in thousand tons.							
	Coal.	Iron.*	Slates.	Tin.*	Salt.	Clay.	Lead.*	Shale.
1886	157,000	4,900	460	9	2,100	2,400	39	1,700
1892	181,000	4,000	420	9	1,900	3,100	29	2,100
	Value in thousand pounds sterling.							
	1886	38,100	11,200	1,100	940	740	580	520
1892	66,000	10,400	1,000	890	860	890	320	520

Manufacturing towns using steam power require to command a supply of raw material and coal, hence in Britain, where most of the raw material is imported, they are usually situated on a coal-field near a sea-port; but improvements in sea-transit and in utilising fuel, and the great cost of railway carriage, make it cheaper in many cases for inland manufacturers to desert the coal-fields for the coast, or, as in the case of MANCHESTER, to open a way for ocean steamers to the town.

* Metal after extraction.

Textile manufactures, the staple of British trade, employ directly 1 million people, more than half of whom are women; and indirectly probably 3 million more.

Cotton was imported exclusively at LIVERPOOL (520) until the opening of the Manchester ship canal in 1894, and distributed to MANCHESTER, GLASGOW, and other manufacturing centres. Almost all the cotton factories of the country are situated in *Lancashire* and *Lanarkshire*, particularly in the former county. MANCHESTER is the commercial centre for cotton, the actual spinning and weaving being carried on in the surrounding towns. Dyeing and calico-printing works are relatively most numerous in Lanarkshire. The annual import of raw cotton averages 800,000 tons, of which less than 90,000 are re-exported, the remainder being retained for manufacture. About 2 million miles of cotton cloth are exported every year, the value being 1s. 2d. per head of the population of the world.

Woollen manufactures, first in order of antiquity and second in importance, use up 250,000 tons of foreign wool yearly in addition to the native supply. Most of the English factories are in the *West Riding* of Yorkshire, where the large towns, such as LEEDS, BRADFORD, HALIFAX, and HUDDERSFIELD, each with its special department of cloth making, are connected by busy villages. There are isolated woollen factories in *Gloucestershire* for "West of England cloth"; in *Wales* for flannel, and in *Ulster*. In *Scotland* the principal production is of tweeds at HAWICK and GALASHIELS in the Tweed valley.

Flax is spun and **linen** manufactured chiefly at BELFAST (260) and other towns in the flax-growing district of Ireland. This industry has long been pursued in KIRKCALDY and DUNFERMLINE and other towns of the eastern counties of Scotland. Linen weaving receives less attention in England, the factories of LEEDS and the neighbourhood in most cases simply spin the fibre which is sent out as yarn.

Jute is the characteristic textile manufacture of Scotland, the trade being almost confined to DUNDEE (160), ARBROATH, and the neighbouring towns.

Silk has greatly declined in importance as a British manufacture, and the industry is not distinctly localised. *Spitalfields* in LONDON is historically associated with silk-weaving, and still contains looms, but MACCLESFIELD, CONGLETON, COVENTRY and other towns to the south of the cotton and woollen regions are now more important.

Thousand Persons employed in 1885.

Factories.	Cotton.	Wool.	Silk.	Flax.	Jute.	Other textiles.	Total.
England & Wales	465	245	40	11	4	49	814
Scotland	37	33	1	39	36	6	152
Ireland	1	3	—	62	1	1	68
U. Kingdom	504	282	41	112	41	55	1,035

Machinery is made in all manufacturing, agricultural, and railway centres. MANCHESTER, BIRMINGHAM, LEEDS, and GLASGOW contain most of the largest establishments. BIRMINGHAM is the great centre of gun-making, more than half-a-million gun-barrels being turned out every year. Some small departments of metal-manufactures are localised; nail-making by hand in the *Black Country*, screws, pens, pins, electro-plate and jewellery in BIRMINGHAM, and bicycles and sewing-machines at COVENTRY, for example. Pottery and earthenware employ many hands in *North Staffordshire*. Bricks and tiles are manufactured all over England; but the largest brick-fields of the country occur in the south-east in the clay country of Norfolk, Essex, and Kent. Chemical works of enormous magnitude for the manufacture of sulphuric acid and soda are situated in GLASGOW, the *Tyne* district, the south of *Lancashire* and other places.

Drink manufactures are chiefly of beer in *England* and whisky in *Scotland* and *Ireland*. There are world-famous breweries in the capitals of each of the three kingdoms, but more beer is probably brewed in BURTON-ON-

TRENT, which contains the great establishments of Bass and Allsopp, than in any other town in the world.

Canals. The United Kingdom is traversed by about 1,800 miles of navigable rivers and 3,800 miles of canals. The *Caledonian* and *Crinan* canals in Scotland were designed to save coasting vessels a stormy passage; the Manchester Ship Canal admits ocean steamers into the heart of the Lancashire manufacturing district; the ship canals of GLOUCESTER and BRISTOL are simply harbour improvements; all the other water-ways are for the conveyance of goods by barges. The *Forth* and *Clyde* estuaries are joined by a canal between GRANGEMOUTH and BOWLING. The Pennine chain is crossed by two canals uniting the *Humber* and the *Mersey*; and the Central Plain of England is traversed by a complicated network which brings all parts of the country into water communication with the four great river systems, the *Humber*, the *Mersey*, the *Thames*, and the *Severn*. In Ireland two main lines, the *Royal* and the *Grand*, run west from DUBLIN to the *Shannon*, and another connects *Lough Neagh* with the sea.

Railways form a close network over the coal-fields and commercial districts of the kingdom, and penetrate the less densely populated regions as trunk lines with a few branches. In 1893, 20,300 miles were open for traffic, of which 14,000 were in England and Wales. Although the lines belong to more than 150 companies, nearly the whole is worked by about 30, and as the gauge is uniform, a truck of goods may be sent through without reloading to any part of the country. The London *Metropolitan* and *District Railways* are the busiest passenger lines in the world, conveying a large part of the commercial population of LONDON to and from the City daily. All the great lines of Britain radiate from LONDON, although there are many minor centres where they converge.

Three small companies, the *South-Eastern*, the *London, Chatham and Dover*, and the *London, Brighton and South Coast*, whose termini are Charing Cross, Victoria and London Bridge, occupy the counties of Kent, Surrey, and Sussex, from the Thames to PORTSMOUTH, and carry the bulk of the Continental trade from QUEENBORO', DOVER, FOLKESTONE, and NEWHAVEN. The *London and South-Western* line runs straight from Waterloo Station through SALISBURY to EXETER,

sending branches to most of the coast towns between SOUTHAMPTON and PLYMOUTH.

The *Great Western* system, with Paddington as its terminus, is the largest in England, and takes the largest share of traffic. From READING it branches south and north as it proceeds westward until it forms a network, with the main termini widely apart at CHESTER, MILFORD, BARNSTAPLE, and PENZANCE. The great Severn Tunnel connects BRISTOL with the South Wales district. BIRMINGHAM is an important centre on this line. From WEYMOUTH mail-steamers leave for the Channel Islands.

The *London and North-Western*, second in point of length, runs from Euston direct to CREWE, sending out branches which interlace with the Great Western system on the south and with the Midland on the east; from CREWE it spreads to South Wales, across the Menai Bridge to HOLYHEAD (on the mail route to DUBLIN), to LIVERPOOL, and through the cotton district to CARLISLE. Here it connects with the *Caledonian* system, passing through Scotland to GLASGOW, EDINBURGH, OBAN, PERTH, DUNDEE, and ABERDEEN, whence the mail steamers sail for *Shetland*. From PERTH the *Highland* line traverses the glens and passes of the mountains to the extreme north and west of Scotland, connecting at THURSO with the mail steamer for *Orkney*, and at STROME FERRY with that for STORNOWAY.

The *Midland*, from St Pancras, runs nearly parallel to the North-Western to MANCHESTER, northward by SHEFFIELD through the woollen district to CARLISLE, joining the *North British* line across the centre of Scotland (Waverley route) to EDINBURGH, and the *Glasgow and South-Western* to GLASGOW. Another line runs southwest from DERBY to BRISTOL.

The *Great Northern*, over which some of the fastest trains in the world travel, leaves King's Cross and passes directly north to PETERBOROUGH and YORK, sending branches into Lincolnshire. At YORK it connects with the *North-Eastern* system, which spreads over the three northern counties, and at BERWICK joins the east coast branch of the *North British* which leads to EDINBURGH, thence by the Forth Bridge to PERTH, by the Forth and Tay Bridges to DUNDEE and ABERDEEN; and by GLASGOW to the *West Highland* line which terminates at FORT WILLIAM.

The *Great Eastern* leaves LONDON at Liverpool Street in two main lines, one of which runs to HARWICH in connection with steamers to continental ports, the other through CAMBRIDGE and ELY to LYNN; numerous branches traverse the eastern counties with termini at YARMOUTH and LOWESTOFT.

Several short lines are unconnected with LONDON, of which the most important are the *Cambrian* in Wales, the *Manchester, Sheffield and Lincolnshire*, the *Cheshire lines*, and the *Lancashire and Yorkshire*

Railway in the great industrial region, and the *Great North of Scotland*.

The **Irish railway system** spreads in all directions from DUBLIN. The *Great Northern* line strikes north along the coast and then runs westward over the province of Ulster, uniting at BELFAST with the *Belfast and Northern Counties* line, which sends branches to all the coast towns on its way to LONDONDERRY. The *Midland Great Western* runs west from DUBLIN to MULLINGAR, where it divides into two branches which fork successively and terminate at various towns on the west coast of Connaught from SLIGO to GALWAY. The *Great Southern and Western* branches from DUBLIN over the south-west of Ireland to CORK and KILLARNEY, and is crossed at right angles by the *Waterford and Limerick* line which extends beyond LIMERICK toward the north-west and south-west. The short line of the *Dublin, Wicklow and Wexford Company* runs southward along the east coast.

The **standard time** for railway and all other purposes in Great Britain is that of Greenwich Observatory; throughout Ireland Dublin time takes its place. Thus while it is called 12 noon in STORNOWAY (Greenwich time) it is 11.35 a.m. at DUBLIN in nearly the same longitude.

The Shipping Industry. The British Islands occupy the most **favourable position** in the world for ocean communication with all other places. The mercantile navy, comprising 21,000 vessels with an aggregate tonnage of $8\frac{1}{2}$ million (of which $5\frac{1}{2}$ million represents 6,500 **steamers**), is the largest in the world. British ships do most of the ocean carrying for foreign nations, and the majority of iron and steel steamers sailing under foreign flags, except American, were built in British ship-yards. **Shipbuilding yards** occur along both banks of the *Clyde* at intervals from GLASGOW to GREENOCK, and in these most of the largest steel vessels are built. The ports of the *Tyne*, the *Wear*, and *Tees*, especially NEWCASTLE, SUNDERLAND, STOCKTON, and HARTLEPOOL, together launch nearly as great a tonnage as the *Clyde*, while a much smaller amount is built at LIVERPOOL and BELFAST. Wood is now used only for small vessels, such as fishing smacks, and ship-yards for building these are found in many towns along the coast.

The five **chief sea-ports** carry on more than one-half

of the maritime trade of the kingdom, reckoning by tonnage ; the figures given below refer to 1892 and exclude coasting trade, which if included would nearly double the amount. LONDON and LIVERPOOL together account for 62 per cent. of the trade of the country, considering the values of the cargoes, HULL comes next with 6 per cent. and GLASGOW with 4 per cent. of the total value, and when HARWICH with 3 per cent. is added these five ports account for three-quarters of the total trade.

a. The port of LONDON consists of the River Thames with a vast and complicated system of docks, occupying the projecting land between the river-windings. The **movement** of the port, or the capacity of the shipping entering and leaving, is about 14 million tons a year for oversea trade. The *imports* of merchandise from all parts of the world greatly exceed the *exports*, and the **tea, tobacco,** and **wine** brought into LONDON by sea contribute half the Customs revenue of the country. LONDON, with its population of nearly 5 millions, is a mercantile, rather than a manufacturing centre, although it contains works representing almost every branch of industry. Its position as the metropolis makes it the head-quarters of the principal railway and banking companies ; the Royal Exchange and Bank of England form the centre of the financial world. It is entirely unlike any other town ; in magnitude, range, and variety its activities resemble those of a complete nation. As an *entrepot* or market for transshipping goods the port has been steadily declining since the opening of the Suez Canal offered a direct route for the produce of the East to southern Europe.

b. LIVERPOOL (with BIRKENHEAD) on the rapid bar-blocked Mersey, with an annual movement of over 11 million tons, resembles LONDON in being mainly a mercantile city. Its docks rival those of the Thames in extent ; the trade is more specialised, the *imports* consisting chiefly of **cotton, grain,** and **cattle** from America and the produce of West Africa. It is the ocean-gate for the

intensely active Lancashire district, bringing in raw cotton, and exporting the finished cloth to all the world. It exports more British manufactures and produce than any other port in the kingdom, and has most of the passenger trade with America. Yet it is remarkable in having no exports of coal.

c. CARDIFF on the Bristol Channel, with about 10 million tons movement, is, together with Barry Dock, the chief export harbour for the **coal** and **iron** of South Wales. It is a progressive and prosperous town, profiting greatly by the migration of iron works and factories from inland districts to the coast. Its export of coal in 1892 amounted to more than half of the entire British export.

d. The Tyne Ports, including NEWCASTLE and NORTH and SOUTH SHIELDS, have a movement of 8 million tons. The chief export is **coal** from the northern fields, and **iron** and **steel** manufactures from numerous works in the neighbourhood, the most celebrated of which is Armstrong's gun-factory at Elswick, where war-ships are built and the largest cannon made.

e. HULL with a movement of 4 million tons of over-sea shipping has a fine set of docks, and is one of the most progressive sea-ports. Large quantities of cotton and woollen manufactures are exported, and imports are received from all parts of the world but chiefly from the North Sea and Baltic ports.

f. GLASGOW (3 million tons movement) is second in population only to LONDON, and in the multifarious manufactures full advantage is taken of its favourable situation with regard to the Scottish **coal** and **iron** fields and to the Atlantic. The imports are very varied, **ores** being important; the exports are **manufactures** of all kinds.

PORTSMOUTH and PLYMOUTH are great naval stations, and the head-quarters of the British fleet, the former having the largest Government dockyard in the world; the latter is the port of departure for mail steamers to the East and to the West Indies. SOUTHAMPTON has

also a large foreign passenger trade, being the British port for the *North German Lloyd* and *American Line* steamers. **MOVILLE** on Lough Foyle in the north of Ireland, and **QUEENSTOWN** on Cork Harbour in the south, are ports where Atlantic steamers land and embark their mails.

Works now in progress at **PETERHEAD** on the east of Scotland will result in the formation of a great national harbour of refuge in which vessels of any size can be secure in the worst storms, and which will always be easily accessible from the North Sea.

Imports and Exports. The average value of goods imported into the United Kingdom during the ten years 1884—1893 was 397 million pounds a year, or nearly £11 for every inhabitant, while the exports of British productions and manufactures amounted to 232 million. There were also re-exports of imported goods to the value of 62 million pounds. The total sum representing British trade is thus 691 million pounds, more than twice the trade of any other nation. The imports are chiefly **food and raw materials**, the exports native **productions and manufactured articles**.

The following table comparing the exports and imports of 1885 and 1893 deserves attentive study. Generally speaking the exports of a country pay for its imports. Thus the comparatively small sum which represents British exports as valued at the port of departure is increased by freight, trader's profits and the greater usefulness of the commodities when they reach other countries, until it balances the imports. Much of the profit of transporting the goods of the world falls to British ship-owners.

Imports to United Kingdom, value in million pounds.

Class A. <i>Food.</i>			Class B. <i>Raw Materials.</i>		
	1885	1893		1885	1893
Grain and Flour	53	51	Raw Cotton	36	31
Sugar	18	22	Wool	21	24
Animals and Meat	17	29	Metals	16	15
Butter, etc.	11	16	Wood	15	13
Tea	10	10	Flax and Jute	9	8
Fruits	6	6	+ other raw materials	28	30
5 other food materials	20	22			
	<u>135</u>	<u>156</u>		<u>125</u>	<u>121</u>
Food and Raw Materials under 3 million pounds in value				50	60
Class C, Articles of foreign manufacture				60	68
			Total Imports A + B + C =	<u>370</u>	<u>405</u>

Exports from United Kingdom, value in million pounds.

Class A. <i>Native Productions and their manufactures.</i>	1885		1893		Class B. <i>Manufactures of Foreign raw material.</i>	1885		1893	
Coals and Fuel	10	15	Cotton manufactures	67	64				
Iron and Steel	22	21	Woollen „	23	21				
Machinery	11	14	Linen, jute, &c.	10	13				
	<u>43</u>	<u>50</u>		<u>100</u>	<u>98</u>				
Manufactures of less value than 10 million pounds				70	70				
				<u>70</u>	<u>70</u>				
				Total Exports A + B =		213	218		

Origin and Destination of Trade. About one-quarter of the imports comes from British possessions abroad, and nearly one-third of the exports is sent there; thus the Colonies and India are relatively more important as markets for manufactured goods than as fields for producing raw material. One-quarter of British imports comes from the United States, and half of the exports is shared between the United States, India, Australasia, Germany, and France.

Trade of United Kingdom in million pounds.

Country	Imports from.		Exports to.		Total.	
	1885	1892	1885	1892	1885	1892
India	32	30½	31	28	63	58½
Australasia	21	30½	22	19	43	49½
Canada	10	14½	8	7½	18	22
Other colonies	19	22	14	20	33	42
United States	81	108	27	26½	108	134½
France	36½	43½	13½	14½	50	58
Germany	21½	26	15½	17½	37	43½
Holland	25	29	8	9	33	38
Belgium	14	17	7	7	21	24
Russia	13½	15	4½	5½	18	20½
China	8	3½	5	6	13	9½
Spain	9	11	3	4½	12	15½
Egypt	7	10½	3	3	10	13½
Turkey	4	5½	6	6	10	11½
Other countries	48½	47½	44½	53	93	100½
Total	<u>350</u>	<u>414</u>	<u>212</u>	<u>227</u>	<u>562</u>	<u>641</u>

In the United Kingdom there is almost **free trade**; there are no protective duties on foreign produce, and the **customs duties**, which amount to 20 million pounds a year, are concentrated upon a few clearly defined articles; **tobacco**, **tea**, and **alcoholic liquors** yielding nine-tenths of the revenue from this source.

The **population** of the British Islands is ascertained by a census every ten years. In 1891 it amounted to a little more than 38 millions, 4 millions of whom lived in Scotland, and $4\frac{3}{4}$ millions in Ireland. The population of *Ireland* has been decreasing steadily by emigration since the potato famine of 1846, that of *England* and *Scotland*, in spite of a higher death-rate, has been increasing, and it is calculated that the United Kingdom now contains $38\frac{1}{2}$ million people, or 320 to the square mile. LIVERPOOL (which is twice as densely peopled as LONDON) has 73,000 inhabitants to the square mile; over nearly half of Scotland there are less than 30 on an equal area. Excluding towns of more than 10,000 inhabitants the density of population exceeds 400 to the square mile, only in Middlesex, Co. Dublin, Lancashire, Renfrew, Durham and Surrey; and is less than 25 in Sutherland, Inverness, Argyll and Ross. In consequence of the gradual extinction of domestic industries such as hand-loom weaving, and the continual reduction in the area of land cultivated, there is in progress a **concentration of population**, the rural population steadily diminishing, while the number of dwellers in large towns increases. About 300,000 **emigrants**, a quarter of whom come from *Ireland*, leave the United Kingdom every year, nearly nine-tenths of them going to the United States. There are no restrictions on **immigration**; people of any nationality may settle in the United Kingdom and compete in any industry on equal terms with the natives.

The **people** of the British Islands, although belonging to several different races, and governed to some extent by different laws in the three kingdoms, are bound together by a common language and equal political rights. They are characterised by **perseverance**, **energy**, and **independence** beyond most nationalities. **Education** is compulsory, but in technical instruction the workmen of some continental nations have as yet greater advantages. The national vice is **drunkenness**, and on account of the greater sobriety of foreigners they are preferred to British subjects in some branches of industry.

The only Government **restrictions on trade** or commerce are laws regulating the hours of labour, the employment of women and children, the loading of ships, the pollution of air and water by factory refuse, and some others, all calculated to increase the security and well-being of the people employed. The principal duties of the **Board of Trade**, a department of Government, are the control of harbours, of shipping and emigration, the inspection of railway works, and enquiry into accidents, the promotion of fisheries, the testing of weights and measures, the collection of statistics bearing on agriculture and the commerce of the country, and the publication monthly of a *Journal*, with information about foreign markets and fields of supply. **Inspectors** of mines, of factories, and of explosives are appointed by the Home Office to enforce the various regulations passed by Parliament on these subjects. The **buoys** and **lighthouses** of the English coast are under the charge of the

Trinity House, those of Scotland and Ireland are under separate Commissioners. In Scotland there is a **Board** to control and report on the **Fisheries**.

There are two **Government monopolies**, the **Post-Office**, to which the privilege of carrying letters is reserved, and the **Telegraph Department**, with the sole right of electric transmission of messages. There are 19,600 post-offices and 25,000 other receiving boxes in the United Kingdom, and there are 130,000 people employed in the postal and telegraph services. Every person in the kingdom receives, on an average, 50 letters a year. The Post-office also acts as a carrier for small parcels and conducts a large banking business, receiving sums down to 1s., on which interest is paid with Government security; the number of depositors in 1890 was nearly 5 million. About 34,000 miles of wire are in use for telegraphic purposes, and nearly 60 million messages are sent annually. In all the large towns there are **telephone exchanges**, which are sanctioned by the Telegraph Department, and largely employed in mercantile affairs. The foreign telegraph **cables** are, as a rule, the property of private companies, the rates are consequently irregular, and are in some cases excessive.

The **coinage** has gold as the standard, silver and bronze being used as tokens of value; the English banks issue notes of £5 and upwards, those of Scotland and Ireland employ also £1 notes, which are the smallest paper money in use.

The **defence** of the British Empire is provided for by a **regular army** of 220,000 soldiers, with twice as many to fall back on in the **army reserve**, the **militia**, and especially the **volunteer** force, a means of defence peculiar to Great Britain. The **navy** is the principal strength of the country, and has a two-fold object, to *protect* the British Islands and colonies from invasion, and to secure *the mastery of the seas*, so that merchant vessels may sail without fear of attack by an enemy, and that the supply of food from abroad, on which the United Kingdom is absolutely dependent, may never be cut off. It consists of 80 armoured battle-ships and cruisers, and 406 other vessels, manned by 75,000 sailors and marines; in addition, the great passenger lines have agreed to provide a large number of the largest and swiftest steamers in existence for service as armed cruisers in time of war, yet the war-navy bears a very much smaller proportion to the navies of other powers, than the merchant ships of Great Britain bear to those of the rest of the world.

CHAPTER VIII. BRITISH POSSESSIONS IN ASIA.

British Possessions. *The Indian Empire*:—Configuration. Climate. Agricultural resources. Minerals. Manufactures. Railways. Sea-ports. People. Trade. *Asiatic Colonies*:—their resources, towns and trade. Aden. Ceylon. Straits Settlements. Hong-Kong. British Borneo.

British Possessions. The possessions of the British Empire have different degrees of independence. The Empire of India is ruled by a Governor-General or viceroy, acting under the **Secretary for India** (who is a member of the British Government) and assisted by a large staff of subordinates governing the various provinces and watching over the native dependent princes who are allowed to retain a certain amount of power. The **Secretary for the Colonies** is responsible for **crown-colonies**, usually tropical possessions which contain a great majority of native or coloured inhabitants, and administers them by means of governors whom he appoints: he has also control over the officers of some colonies which have **representative** parliaments such as Malta and Ceylon. All the highly-developed British settlements, including Canada, Cape Colony, New Zealand, and Australia have **responsible** parliaments, over which the home Government has no control whatever, the appointment of governors having the right of veto on any bill passed by a colonial parliament being the only mark of authority imposed. There is as yet no commercial unity in the British Empire, the systems of money and of taxation differ widely, and most of the colonies impose high **protective duties** on the produce or manufactures of other possessions and of the mother country.

THE INDIAN EMPIRE.

Configuration. The Indian Empire comprises the great peninsula of Asia between the Arabian Sea and the Bay of Bengal, and the strip of country bounding that gulf on the east; it has a total area of $1\frac{1}{2}$ million square miles, or more

than 12 times that of the British Islands. In the north the vast range of the **Himalayas** runs like a wall from north-west toward south-east, dividing India from the high plateaus of Central Asia. The parallel mountain chains that run from north to south through Burma unite with the eastern extremity of the Himalayas to shut in the fertile valley of Assam. South of the Himalayas a wide **Plain** stretching across the peninsula is traversed by three great river systems, fed by the melting Himalayan snow. The *Indus* flows into the Arabian Sea across the Punjab on the west. The *Ganges*, with many tributaries, flows for 1,500 miles south-eastward and interlaces with the *Brahmaputra* from the Assam valley, in a vast delta at the head of the Bay of Bengal. These rivers, although constantly changing their channels, and liable to uncontrollable floods, are the life of the region; their silt spread over the inundated land forms soil of wonderful fertility, and by means of a network of irrigation canals they distribute moisture to thousands of square miles of cultivated fields, where the rainfall is insufficient. The great plain is bounded on the south by the Vindhya Hills forming the base of a triangular plateau, the **Deccan**, diversified by many hills and valleys and enclosed by the coast ranges of the Eastern and Western Ghats, which converge and unite in the south. The *Irawadi* in Burma is the only important navigable river, except those of the Great Plain, steamers being able to run on it for 700 miles from the sea to BHAMO.

The **climate** is tropical at sea-level, but the air on the hills is much cooler. The **rainfall** depends on the *monsoons*, winds which, speaking generally, blow dry during the winter months from the cold uplands of Asia, and in summer come laden with vapour from the warm Indian Ocean. It varies from about 600 inches a year on the Assam hills to less than 5 inches in the Indian Desert, on the western side of the peninsula. The Deccan and the Punjab are on the whole dry, and are subject to periods of drought and famine, which Government irrigation works have considerably reduced.

Agricultural resources. India is essentially an agricultural country; in no other part of the world does so

great and dense a population depend so completely on the fruits of the earth.

Millet, in two chief varieties known as *joar* and *bajra*, is cultivated over the entire peninsula and occupies eight-tenths of the food area in part of the Deccan. **Rice** is grown principally on the Ganges plains, and on all the river-deltas round the Bay of Bengal; it forms the only food of more than 90 million people. *Bengal* raises considerably more than half the Indian crop, there being two harvests in the year. The name of PATNA, one of the collecting stations on the Ganges, is often associated with the grain in Europe, but most rice is exported to the United Kingdom from RANGOON. **Wheat** is important only in the dry regions of the *North-West* and *Central Provinces*, and the *Punjab*, but there it is now the chief food-grain produced. About 20 million acres in India are under wheat, 60 million under rice, and as much as 80 million produce millets, but since there are no statistics available for the great province of *Bengal* these figures are only roughly approximate.

Cotton is the staple industrial plant, occupying about 9 million acres. The most important regions of production are the plains of Gujarat in the north of *Bombay* Presidency (where SURAT gives its name to Indian cotton in the British market), and the *North-West* and *Central Provinces*, whence the crop is forwarded to BOMBAY. MIRZAPUR, the head of navigation on the Ganges, was an important cotton market, but has declined as a cotton centre, while CAWNPORE has steadily increased in importance since railways superseded river-steamers. Smaller quantities are grown in *Madras* and in other parts of India. **Jute** is confined to the rich plains of northern and eastern *Bengal*; CALCUTTA is the chief centre of its collection and export, but shipments are also made at CHITTAGONG. **Tea**-growing has its head-quarters in the valleys of *Assam* and the north-east. **Tobacco**, although only beginning to be an article of export, occupies more land than the

tea-plant. **Indigo**, formerly more important, is still a valuable crop in *Bengal* and the north of India, chiefly in Behar. **Poppies** are grown under Government restrictions in the Ganges valley, where the **opium** manufacture is confined to PATNA and GHAZIPUR, and the drug shipped at CALCUTTA. The manufacture of opium is free in the fertile plateau of Malwa in Central India, and the tax is levied on it when the finished product comes into *Bombay*. Throughout the greater part of India the growth of opium poppies is absolutely prohibited. **Cinchona**, **hemp** (chiefly for its intoxicating resin, *bharg*), **flax**, **coffee**, **sugar-palms**, and **fruit** are amongst the cultivated plant productions of minor importance. **Oil-seeds**, such as mustard (rape), cotton, and linseed, are largely grown for export.

Much of the hill-country remains under **forest**; the woodlands are carefully controlled and timber-cutting regulated by Government. The most valuable wood amongst the 2,000 species of forest trees is **teak**, chiefly obtained from *Burma* and the Western Ghats, and next to it comes **sal**, which flourishes on the lower Himalayas and the north of the Deccan.

Cattle, of which there were 50 million in 1885, and **sheep** to the number of 24 million (including goats) are the chief live-stock. Horned cattle do most of the agricultural work, and are usually in a wretchedly poor condition from the scarcity of pasturage, land being too valuable to be left under grass. About half of them are the gentle, cream-coloured, humped oxen or *zebus*, the remainder being the less tractable but more hardy black *buffaloes*, which are most numerous in the marshy delta-lands. **Silk-worms** are cultivated to a small extent in lower *Bengal*, and **tussar silk**, the less valuable cocoons of several species of wild caterpillars, is also collected. The **fisheries** of *Burma* are the most valuable in the East, and as the salt-tax in that province is low, cured fish is exported.

Minerals. Over 2 million tons a year of **coal** are raised

in India, nine-tenths of it from the collieries of RANIGANJ in the Damodar valley, whence it is sent to CALCUTTA and used for the local railways and steamers. It has the disadvantage of a large proportion of ash. BOMBAY and MADRAS import coal from England. **Iron** occurs plentifully but is little worked. **Gold, copper, and diamonds** in Central India, **rubies** in *Burma*, and **petroleum** are obtained in small quantities. The **salt** trade, as in many eastern countries, is a Government monopoly, and it is a crime for a native to boil down sea-water or gather saline incrustations from the shore. The supply comes from the rock-salt hills of the Salt Range in the *Punjab*, worked chiefly in the Jehlam district, from salt pans evaporating sea-water all round the coast, from inland salt-lakes, and by importation from England.

Manufactures. The villages of the north and the native states in the Deccan have long been celebrated for the beauty and delicacy of the cotton and silk fabrics woven by the people in their own dwellings; but this domestic industry is now much reduced. **Jute weaving** and the manufacture of gunny bags by hand is largely carried on in the villages of north-eastern *Bengal*. **Metal work**, chiefly in the shape of cheap ornamental articles for the London market, still flourishes at the holy city of BENARES on the Ganges, and coarse pottery, jewellery, filigree work, inlaying, and wood and ivory carving are carried on in many places. **Carpet** and **shawl-weaving** employ many scattered villages. There are **factories** on the European pattern with steam-machinery for **cotton** in BOMBAY and for **jute** in CALCUTTA.

Railways. India contains about 18,000 miles of railway, most of which belong to Government or are under Government control; and there are over 38,000 miles of telegraph line. MADRAS is the centre of the south Indian railways and sends off three chief lines, one along the coast southward through the small French colony of Pondicherry and on to TUTICORIN and TINNEVELLI; another south-westward through the Palghat Gap to CALCUT, branching through the important manufacturing city BANGALORE, and on to Goa in Portuguese territory.

A more important line runs north-westward through the valleys of the Deccan through the Bhor Ghat direct to BOMBAY, with a branch to HYDERABAD (410), the capital of the Nizam's dominions. From BOMBAY a railway runs north-east along the Narbuda valley to ALLAHABAD on the Ganges, where it joins the main line from the north-west frontier to CALCUTTA. Another passes eastward through NAGPORE, a cotton and rice centre, and the fertile wheat-growing plain of Chhatisgarh to CALCUTTA; furnishing the shortest railway route between the two great sea-ports. A line to the north connects BOMBAY with the cotton and wheat fields of Gujarat, and is continued through Rajputana to AGRA, a great collecting centre of agricultural produce on the Jumna, and to DELHI. CALCUTTA is the terminus of the whole railway system of northern India which runs in a long network parallel to the Ganges, connecting the great cities of the Plain, and extended to PESHAWAR on the extreme north-western frontier at the mouth of the Khaibar Pass. Numerous narrow-gauge lines branch from these railways to north and south, one of these is a 2-foot gauge railway to the Himalaya health-resort of DARJILING. The wheat-district of the *Punjab* is opened to the sea by a line from LAHORE, an important junction with the northern railways, down the Indus valley, passing MULTAN, to the port of KARACHI. From this line the Sind-Pishin Railway runs westward to SIBI, from which two lines reach QUETTA in Baluchistan, one through the Bolan Pass, the other through the Khojak tunnel, $2\frac{1}{2}$ miles long. The roads, although no longer required as main arteries for commerce or military transport, are maintained in good order for local purposes. Land communication between India and neighbouring countries is little developed on account of the difficulty of the **mountain passes** and the opposition of the Chinese Government in Tibet. Some trade is however likely to be established with Tibet at Yatung. The northern frontier trade flows chiefly through the Khaiber and Bolan passes to Afghanistan and Persia on the west, up the Brahmaputra on the east, and into the independent states of the southern Himalaya slopes.

Sea-ports. India, with a sea-board of more than 9,000 miles, has few harbours. KARACHI (*Kurrachee*, 100), on the western frontier, ships much of the *Punjab* wheat.

BOMBAY (800), 500 miles south-east of KARACHI (6,300 miles or 19 days from Plymouth by the Suez Canal), has the best harbour in southern Asia. The town, built on an island connected with the mainland by roads and railways, dates its prosperity from the failure of the American cotton crops during the civil war. It now con-

tains many steam cotton mills, with two-thirds of all the cotton spindles at work in the Indian Empire. The manufacture has developed by the energy and capital of natives, chiefly Parsis, and in the coarser varieties of cloth it competes successfully with Manchester. The chief exports are raw **cotton**, most of which goes to the continent of Europe, wheat and oil-seeds.

MADRAS (450), on the eastern or *Coromandel* coast, is the third commercial town of India, and has several small manufactures. Ships formerly anchored off the shore, and passengers and goods were landed in surf-boats, but great efforts have been made in spite of many difficulties from the heavy surf to construct a harbour, which, although not fully satisfactory, facilitates landing.

CALCUTTA (including suburbs 840) is the capital and the greatest port, doing half the sea-trade of the empire. It is 3,400 miles or 9 days from BOMBAY by sea, and 1,500 miles by rail. The city stands 86 miles up the rapid and ever-varying Hooghly river, the most westerly mouth of the Ganges. This situation is central for the commerce of *Bengal* and *Assam*, and communication is easy by railway and river with all the great produce-collecting cities of the Plain, the **rice**, **jute**, **tea**, opium, and indigo of which it exports. The manufactures of the city are extending.

RANGOON (180), on the delta of the Irawadi, is the chief harbour of *Burma*, and exports great quantities of rice from the low-lying cultivated coast-lands, and **teak**-wood from the forests of the interior. Railways run from Rangoon to PROME on the Irawadi and to MANDALAY farther up the river, beyond which the line is being extended.

These four seaports carry on between them nineteenth-twentieths of the foreign trade of India. CALCUTTA and BOMBAY together conduct more than three-quarters of the sea-borne commerce, which as a rule is with Europe by the Red Sea and Suez Canal, although there is increasing intercourse with China, Australia, and Africa.

People. In 1891 the population of India was 286 million, including members of many different races, speaking more than a hundred languages. Above two-thirds are *Hindus* in religion, and one-fifth *Mohammedans*. Population is densest in the rich agricultural region of the Ganges plain, where in many parts of *Bengal* the density reaches 1,200 per square mile without any concentration in large towns. The people are as a rule village dwellers; in all India there is about the same number of towns exceeding 50,000 inhabitants as in the United Kingdom, which has only one-seventh of the population; and these large towns are almost entirely confined to the great Plain. The non-military British-born residents in India number only 100,000. There are 74,000 British troops and 145,000 natives in the army.

Trade. In 1893 the *exports* from India were valued at 113 million tens of rupees*; **grain** and **cotton** were the two chief articles; then followed opium, seeds, hides, jute, tea, and indigo. Only one-third of these exports go to the United Kingdom, which however sends two-thirds of the *imports*, the total value of which amounted to 63 millions. More than one-third of this represented Manchester **cotton goods**, the other principal articles in order being metals and manufactures of them, silk, sugar, oils, woollen goods, liquors, and coal. In addition a large quantity of gold and silver is annually brought into India as payment for the excess of the exported over the imported goods. There is a small **export duty** on rice which scarcely restricts the trade, but except for the heavy tax on salt and duties on alcoholic liquors, arms and ammunition, the **import** trade is **free** unless duties are imposed on special occasions in order to make up the revenue. Silver is the standard for **coinage**, and the unit is the rupee, nominally worth 2s. but always fluctuating, in 1888 only valued at 1s. 5d. and sometimes approaching 1s. Government issues notes of values from 5 rupees to 10,000. The depreciation of silver makes £1 in gold worth about 15 rupees in silver; hence the export of wheat and other commodities from India is stimulated as if a bounty were paid, every £1 worth of wheat paid in gold giving a clear profit of 5 rupees or 10s. to the exporters, who make their purchases from the farmer in silver. The unit of weight is called a *maund*, but the standard differs, being 82 lbs. in Bengal, 28 in Bombay, and 25 in Madras. In order to secure uniformity the metric system has been legalised, the name *kilogramme* being changed to *ser*.

* In India a "ten of rupees" corresponds to £1 in Great Britain.

ASIATIC COLONIES.

ADEN with Perim on the Gulf of Aden is a fortified coaling station under the jurisdiction of the Bombay Government. The fortified rock of **GIBRALTAR** at the southern extremity of Spain, commanding the entrance to the Mediterranean, and **MALTA**, an island between Sicily and Africa, although in Europe, are of value mainly in securing the route to India by the Suez Canal. All three are military and naval stations garrisoned by British troops.

CEYLON is almost entirely devoted to planting. **Tea** is the chief object of cultivation, and in 1892 tea formed half of the exports from the island in value. **Coco-nuts** and products yielded by them are next in importance, then come **coffee**, **areca-nuts** and **cinchona**. Rice is cultivated for native use and cinnamon and other spices are also grown. The only mineral products are **graphite**, precious stones, and a little gold. **TRINCOMALI**, on the north-east coast, is a fine harbour and head-quarters for the British Navy; **COLOMBO** (130), protected by a break-water and connected by rail with **KANDY**, is the capital and first commercial town, and is now, what **GALLE** at the southern extremity of the island was formerly, the chief port of call for Indian and Australian steamers. The Gulf of Manar and Palk Strait (which contain pearl fisheries) separating Ceylon from India are too shallow to admit large steamers, which must consequently pass to the south of the island.

The **STRAITS SETTLEMENTS**, a Crown colony, comprise several provinces and native protectorates bordering the Straits of Malacca on the route to China. **SINGAPORE** (180), on a small island at the extreme south of the Malay peninsula, is a very busy sea-port, doing a great trade in collecting and distributing the produce of the

neighbouring states and islands; **tin**, **spices** (including **pepper**), **gambier**, **gums**, **tapioca**, rattan canes, gutta-percha, etc. The chief imports are rice, cotton goods and opium for the large Chinese population who do most of the work in mines and plantations. It commands the Strait, and is important as a coaling station.

The small island of **HONG-KONG**, off the mouth of the Canton river in China, contains a magnificent harbour, along the shore of which extends the town of **VICTORIA**, which does a very heavy transit trade between Chinese ports and the outer world, the movement of the port being nearly equal to that of Liverpool or London. The exports and imports consist of **tea**, **silk**, hemp, copper, etc. from China outward, and of British **textile fabrics**, **opium**, and iron manufactures from western ports to "the flowery land." At Singapore and Hong-Kong the *picul* of 133 lbs. is the standard of weight, and the silver dollar, worth about 2s. 9d. (in 1892) is a coin in common use, though British and Chinese currency also circulate. Both ports are absolutely free, there are no custom-houses and no duties.

BRITISH BORNEO includes the northern parts of the island and Labuan, which are under the control of the *British North Borneo Company*, and also the protected states of **Sarawak** and **Brunei**. The productions are chiefly those of plantations, timber and tobacco as well as pepper, gambier, camphor, etc. being exported. A characteristic export is that of edible birds' nests to China.

CHAPTER IX. AUSTRALASIA.

Australia:—climate, resources, people and trade, means of communication. The colonies, their resources, trade, towns and railways. Victoria. New South Wales. Queensland. South Australia. Western Australia. Tasmania. New Zealand. Fiji. Statistics of Australasia.

Australia. The continent of Australia is divided into five colonies, three of which share the strip of fertile and well-watered land which runs along the east coast, barred from the grassy table-lands and dry sandy plains of the interior by the Dividing Range of mountains. It is lacking in internal water communication. The long river Murray and its tributaries are navigable for small steamers only in the rainy season. The **climate** is variable; long droughts sometimes occur, causing the death of millions of sheep, and on the eastern slope there are often disastrous floods. In the summer months—November, December, and January—all parts of Australasia are hot, but not unhealthy; in winter—May, June, and July—the islands of Tasmania and New Zealand are wet and sometimes cold with occasional snow, but the continent, although subject to severe rains on the eastern slope, is warm. The rainfall in the interior is very small and some of the country is arid desert.

Resources. The chief mineral production hitherto has been **gold**, of which more than 2,600 tons, worth 390 million pounds, have been raised since mining began in 1850. **Silver, copper, coal, lead, and tin** are also of great importance. **Wheat** is the staple grain crop in the south; **sugar** and **maize** occupy most land in the tropical northern districts. The magnificently grassed plains west of the Dividing Range

make the rearing of **sheep** the typical industry, and as most of them are merinos, **wool** of the finest quality is the chief Australian export. Dairy farming has recently attracted attention, and Australian **butter** is now received in London. All varieties of **Eucalyptus** trees abound.

People and Trade. The entire population of Australia amounted in 1891 to $3\frac{1}{2}$ million, the average density being 1 to the square mile; but the two largest towns contain nearly one-third of the population of the continent. There are about 70,000 aborigines; most of the people are of British descent, Germans rank next, and there is a variable number of Chinese and *kanakas* (or Pacific Islanders) as labourers. The settlement of Chinese is discouraged in most of the colonies by the imposition of a very heavy tax on each immigrant. There are **import duties** in all the colonies usually for the purpose of encouraging local manufactures, and **export duties** on timber and pearl-shells in several. The **coinage**, weights and measures are those of the United Kingdom; branches of the Royal Mint in Melbourne and Sydney coin sovereigns and half-sovereigns.

Means of Communication. Nearly all the **railways** belong to the State; but as the gauge differs in each colony, through transport of goods is impossible. The **telegraph** system between the colonies is complete. It extends from New Zealand by a cable to Sydney, by overland lines to Adelaide and across the continent to Port Darwin, thence by cable *viâ* Banjowangi in Java and Singapore to Madras, uniting with the Indian and European lines. Efforts are being made to have a supplementary cable touching none but British territory. This would cross the Pacific to the west coast of Canada. The *Peninsular and Oriental Company's* fortnightly mail **steamers** to Melbourne *viâ* the Suez Canal, Colombo and Western Australia (a distance of 12,500 miles), take letters on board at Brindisi which are delivered in Melbourne in 32 days from leaving London. The *Orient line* to Adelaide and to New Zealand by direct fortnightly steamers coaling at Aden or Diego Garcia carry mails in the same time. The *British India Company* carry mails *viâ* the Canal and Torres Strait to Cooktown in Queensland in 44 days. Mails are also sent through America, across the Pacific from San Francisco, taking 40 days from London to Sydney. A new route from Vancouver in British Columbia in connection with the Canadian Pacific Railway takes about 33 days from Liverpool to Sydney, and this time can be shortened when faster steamers are employed.

VICTORIA occupies the south-eastern corner of Australia, and is mountainous except in the north. It is well watered on the east and along the northern frontier, which is marked for 600 miles by the river Murray, but in the north-west of the colony irrigation works are necessary

for agriculture. It is the chief gold-mining colony, and industries of all kinds are developing in most of the towns. MELBOURNE (490), the capital and chief sea-port, is situated on the Yarra-yarra river at the head of Port Philip Bay. Vessels drawing 16 feet of water can get up to the city wharves at high tide; larger ships take in cargo at PORT MELBOURNE and other harbours on the bay. The chief trade of the town is the export of wool and gold, but it contains numerous wool mills, engineering works, and manufactories. BALLARAT (40), a busy industrial town about 70 miles west of MELBOURNE, is the chief centre of the Victorian gold-fields and iron-works, and makes all the locomotives for the colony. BENDIGO (100 miles N.W. of Melbourne and an important railway junction), formerly called *Sandhurst*, is also a great centre of gold mining; and wine is made from the fine grapes of the district. GEELONG, a sea-port on Port Philip Bay, doing a large export trade in wool is the head-quarters of Australian wool weaving, and contains large tanneries, paper-mills, and rope-works.

The railway system branches out from MELBOURNE toward the west and north, over the mining and agricultural regions. One junction is made with the system of South Australia at SERVICETON, and one with that of New South Wales at WODONGA, 190 miles from MELBOURNE, and 390 from Sydney. ECHUCA, the northern terminus of one line, is the chief port on the Murray for light-draught river steamers. Two railways toward the east traverse the rich cattle district of *Gippsland*.

NEW SOUTH WALES, north of Victoria, is the oldest settlement, dating from the arrival of convicts in 1788. There are gold, copper, and tin mines in several places; iron is worked at LITHGOW in the Blue Mountains, and the great Broken Hill Silver mine at SILVERTON on the borders of South Australia, connected by rail with Adelaide, is one of the most productive in the world. Coal of very fine quality extends over large areas and ensures a brilliant future to the colony. Cane sugar is manufactured at GRAFTON, a sea-port on the Clarence river in the north,

where maize-growing is the chief form of agriculture. **Sheep-raising** is the staple industry of the colony.

SYDNEY (390), the capital, is built on the shores of the many-armed natural harbour of Port Jackson, which offers unequalled advantages for shipping. **Wool** is the chief export, and there are manufactories of many kinds, great engineering works and ship-building yards, with docks for repairing the largest ocean steamers. **PARAMATTA**, at the head of Port Jackson, is surrounded by the **orangeries** and orchards of a rich fruit-growing district. **NEWCASTLE** (13) stands at the mouth of the Hunter river, and rivals **SYDNEY** in the amount of its exports, although the harbour is not so good. **Collieries** here employ over 8,000 men, and shipments are made to the extent of $2\frac{1}{2}$ million tons of coal a year to all parts of Australia, Southern Asia, and San Francisco. **WENTWORTH**, at the junction of the Murray and Darling, is a station for steamer traffic during the wet season.

Three main **railway lines**, the longest in Australia, diverge from **SYDNEY**. The *Great Southern* with several branches passes through **GOULBURN** and connects with the Victorian lines on the Murray at **ALBURY** or Wodonga. The *Great Western* climbs the Blue Mountains by a series of zig-zags, and runs north-westward through **BATHURST** across the cultivated and pastoral plateaus and plains to **BOURKE** on the river Darling, 500 miles from **SYDNEY**. The *Great Northern* passing through **NEWCASTLE**, meets the Queensland line from Brisbane at **TENTERFIELD** on the frontier.

QUEENSLAND, the most northerly colony, has a tropical climate, dry in the interior but well watered on the coast. The chief crops are **maize** and **sugar**, in cultivating which the labour of Chinamen and South Sea islanders or *kanakas* is largely employed. **Gold** and **tin** are the principal minerals worked, but **coal** is abundant. **Gold**, **wool**, **sugar**, **hides**, and **tin** are the chief exports in order of value. **Cattle** breeding is important.

BRISBANE (30), the capital, on Brisbane river in Moreton Bay, has a large shipping trade and wool export. **IPSWICH**, 24 miles distant, contains tweed-mills, coal-mines, and lime-

stone quarries, and is a station on the *Southern and Western railway*. This line runs west for 400 miles through a pastoral country to CHARLEVILLE, where a famous artesian well has been bored for irrigation, and southward by the agricultural centre WARWICK to the tin-mines of STANTHORPE, near the New South Wales frontier. ROCKHAMPTON on Fitzroy river, next in population to BRISBANE, is the chief harbour of central Queensland, exporting **frozen meat** and the produce of the gold, copper, and grazing district, through which the *Central railway* runs westward. This line marks the division between temperate Queensland to the south and tropical Queensland to the north. The **Mount Morgan** gold-mine for which it is the outlet is the richest in Australia. TOWNSVILLE, the terminus of the *Northern railway*, has meat-freezing and soap-works, and exports gold from the CHARTERS TOWERS fields. COOKTOWN, 1,000 miles from BRISBANE, owed its rise to the Palmer River gold diggings, but **tin-works** are now more profitable, **sugar** and **rice-growing** are extending, and there is a large fishery of **pearl shells**, clams, and trepang (sea-slugs). MARYBOROUGH (port of the Gympie gold-fields), BUNDABERG, and MACKAY are **sugar-making** coast towns with short lines of rail running inland to gold and tin mining districts. HERBERTON in the north has large **tin** and also silver-lead mines, from which a railway is being made to CAIRNS on the coast. The great **Barrier Reef** of coral lies along the east coast of northern Queensland about 30 miles off, affording a smooth channel for coasting steamers in all weathers.

SOUTH AUSTRALIA separates the three prosperous eastern colonies from Western Australia. A great part of it is nearly rainless desert. The southern coastlands about Spencer Gulf and Gulf St Vincent produce more **wheat** than any other Australian colony and contain **copper** and other minerals. The northern coast with the exception of PALMERSTON on Port Darwin, a coaling station and terminus of the overland telegraph line, is almost unin-

habited. Government irrigation works fertilise hundreds of square miles of otherwise barren land, and **camels** are used for keeping up communication between these artificial oases and the sea, and also for farm work. **Wine making** is an important industry; the chief exports being wheat, wool, copper and wine. There are foundries and agricultural implement factories in several towns.

ADELAIDE (45), the capital, stands 6 miles from its sea-port PORT ADELAIDE on Gulf St Vincent. **Wool** and **wheat** are the chief freights shipped. A railway runs to the south-east, making a junction with the Victorian system. The main line runs north for about 250 miles with branches east and west through the copper districts, and one to Silverton N.S.W., and meets the *Great Northern* line from PORT AUGUSTA, at the head of Spencer Gulf, passing due north to OODNADATTA, 700 miles from ADELAIDE on the overland telegraph line. From PALMERSTON on the north coast a railway has been made south for 150 miles to Pine Creek. In time these two lines may meet and allow an overland mail route to be established. WALLAROO, on Spencer Gulf, ships **copper** and ore from the *Wallaroo* and *Moonta* mines, and has large smelting works.

WESTERN AUSTRALIA is settled only in the south-west corner and at a few points along the coast. Gold, lead and copper mines are worked to some extent; **timber**, especially jarrah, karri, and sandalwood, are exported in quantity, and there are **pearl-shell** fisheries in Sharks Bay and off the north-west coast. Wool, gold and pearl-shells are the chief exports. Agriculture is extending, wheat, vines, and olives being the principal crops, and silk culture is also attracting attention. The chief town is the capital, PERTH (9), 12 miles inland from FREMANTLE, its port. ALBANY on the south coast, 260 miles from PERTH by rail, has a sheltered harbour and is a port of call for the *Peninsular and Oriental* steamers. From Roebuck Bay on the north-west coast a telegraph cable goes to Java.

The island of **TASMANIA** resembles England in climate and scenery. **Coal** occurs abundantly, and is worked at **FINGALL** on the east of the island and in the vicinity of **HOBART**. **Tin** is mined at **MOUNT BISCHOFF** in the north-west and at other places and the ore sent to **LAUNCESTON** by rail to be smelted. Gold-mines are worked and silver is found at **Mount Zeehan** near **Macquarie Harbour** on the west coast. **Stone** is quarried, and exported to **Melbourne** for building. Silk culture has recently been established. The island is rich agriculturally, and grows large quantities of **hops** and **fruit**, brewing and jam-making having become leading industries. There are woollen factories, flour mills and other works in the chief towns.

LAUNCESTON (17), a sea-port 40 miles from the north coast on the river **Tamar**, is connected by 130 miles of railway with **HOBART** (25), the capital and chief sea-port of the colony on a fine inlet of the south coast. Both towns have steam communication with **Melbourne** and **Sydney**, and British mail steamers to **New Zealand** call at **HOBART**.

NEW ZEALAND, 1200 miles south-east of **Australia**, is a group of volcanic mountainous islands, the two largest, **North** and **South Islands**, being separated from each other by **Cook Strait**. **Gold** and **coal** are abundant; **antimony**, **manganese** and **silver** are also profitably mined. **Timber** is of value, especially the **kauri pine**, the fossil gum of which is exported. *Phormium* or native flax furnishes a strong fibre, which is manufactured into coarse cloth and ropes. The chief crops are **oats** and **wheat**. **Sheep** and **cattle-breeding** is molested, as in **Australia**, by **rabbits**, 8½ million skins of which were exported in 1886. **Meat** preserving is one of the special industries; 43,000 tons of refrigerated mutton valued at over 1 million pounds having been exported in 1892. **Manufactures** of all kinds have developed, and are assisted by protective duties.

Railway extension is proceeding rapidly in spite of great engineering difficulties; most of the lines belong to the State. In North Island a line from WELLINGTON runs north-east to NAPIER on Hawkes Bay, a port for shipping timber, wool and meat; another goes north-west to NEW PLYMOUTH. A line from AUCKLAND extends south for about 150 miles, but is separated by more than 80 miles from the southern system. A branch of the Auckland line runs up the Thames valley toward GRAHAMSTON, a centre for gold mining.

AUCKLAND (50) is the chief industrial and commercial town in North Island. It stands on a fine harbour of the east coast separated by an isthmus 6 miles wide from a similar indentation on the west coast. Steamers run regularly to Melbourne, Sydney, and San Francisco. Further north RUSSELL, on the Bay of Islands, is a station for whalers. Coal is exported from the mines of KAWAKAWA. WELLINGTON (30), on Cook Strait, now capital of New Zealand, keeps up direct steam communication with Australia. It contains wool mills, and very extensive meat-freezing and preserving works. A number of native Maoris live in North Island, and have in many cases become intelligent citizens.

In South Island CHRISTCHURCH (30), a manufacturing town on the east coast, with the port of LYTTLETON, is a railway centre, the lines spreading through the surrounding pastoral and agricultural country, and running southward through OAMARU, the outlet for the chief grain district, and DUNEDIN to INVERCARGILL at the southern extremity of the island. DUNEDIN (22) is accessible to steamers drawing 18 feet, larger ships lying at the harbour of PORT CHALMERS, 9 miles distant. It is the first commercial town of New Zealand. It is the centre of a gold-mining region and has numerous manufactures, including woollen goods and machinery. There are few towns on the steep western slope, but the best **coal-mines** are at GREVMOUTH in the north-west, which is reached by a railway from NELSON, at the north end of the island.

The **FIJI** Group, an archipelago of at least 100 inhabited islands, lies about 2000 miles east of Queensland.

The principal products are **coco-nuts** (the dried kernel of which is exported as **copra**), **sugar**, which is very extensively cultivated, coffee, maize, cotton, and all kinds of tropical fruit. The capital **SUVA** on the south coast of Viti Levu, the largest island, possesses a fine harbour. The former capital **LEVUKA** on the islet of Ovalau is of nearly equal importance commercially. Labour for sugar plantations is supplied as in Queensland by *coolies* brought from India and *kanakas* from various Pacific islands; this traffic, which has been greatly abused, is under strict Government supervision.

BRITISH NEW GUINEA occupies the south-western part of New Guinea, an island with a tropical and unhealthy climate inhabited by dangerous savages. The residence of the Administrator at **PORT MORESBY** is the only civilised centre except for a few mission stations along the coast.

Statistics of Australasia, 1892.

Colony.	Area ¹ sq. m.	Pop. ¹	Density.	Government.	Time. ² p.m.	Exports. ³	Imports. ³
Queensland	668	421	0·6	Respons.	10.12	9	4·5
New S. Wales	310	1197	3·8	„	10.5	22	21
Victoria	88	1167	13·3	„	9.40	14	17
S. Australia	903	335	0·3	„	9.14	18	7·5
W. Australia	976	58	0·06	„	7.43	0·9	1·5
Tasmania	26	153	5·9	„	9.49	1·3	1·5
New Zealand	104	650	6·2	„	11.38	9·5	7
Fiji	8	121	15·1	Crown	11.50	0·4	0·3

¹ Thousands.

² At capital, Greenwich noon.

³ Million pounds.

CHAPTER X. BRITISH POSSESSIONS IN AFRICA.

South Africa, physical conditions. Cape Colony, towns, trade and communications. Natal. British South Africa Company's Territory. British Central Africa. Mauritius. Colonies on the West Coast. Royal Niger Company's Territory. British East Africa. Zanzibar.

South Africa. The British possessions in South Africa occupy a series of great terraces, which rise up to a range of mountains running in a curve from south-west to north-east, and succeeded by a high plateau. The climate resembles that of Australia, there is abundant rainfall on the east coast, but the interior is very dry. Cape Colony and Natal occupy the seaward slopes and the pastoral plateaus of the extreme south. The Crown colony of Bechuanaland adjoins Cape Colony, lying north of the Orange river, between the Orange Free State and Transvaal Republic on the east and German South-West Africa on the west. This is succeeded by an immense stretch of territory under the control of the *British South Africa Company*, extending to the sources of the Zambesi and to the south end of Lake Tanganyika, 2,000 miles from the Cape of Good Hope, and touching British Central Africa, which borders the west side of Lake Nyasa.

CAPE COLONY is the largest and most developed of the British colonies in Africa. **CAPE TOWN** (50) on Table Bay, the capital, has the best harbour in South Africa, and is a centre of trade and manufactures. The

main railway of the colony runs north-east 650 miles to KIMBERLEY, which is important for its frontier trade with the Orange Free State as well as for diamond mines. The line first traverses a region of wheat-fields and rich vineyards, and then strikes across the Great Karroo, a dry plateau devoted to sheep-raising. The *Midland railway* starts from PORT ELIZABETH, a large sea-port but poor harbour on Algoa Bay, rivalling CAPE TOWN in shipping and industries; one line runs north-west to GRAAF REYNET, "the Gem of the Desert," a centre of the wool-trade. Another runs north-east, with a branch from GRAHAMSTOWN and PORT ALFRED, sends a branch westward to join the Kimberley line at DE AAR, and continues through COLESBERG to the Orange River, where it joins the railways of the Free State. The *Eastern system* connects the harbour of EAST LONDON with KING WILLIAM'S TOWN, an emporium for native trade, and winds northward over the mountains (highest point 5500 feet) through the coal district of the Stormberg to ALIWAL NORTH and the Orange river, joining the Free State lines. The coal of the *Cypher-gat* and *Indwe* mines, although easily obtained, is inferior in quality, and is only used on the Eastern Railway system. Most of the railway lines belong to the State and are on the 3 ft. 6 in. gauge. A network of overland telegraph lines spreads over the colony, extending to Natal, the Dutch republics, and to British Central Africa.

The coinage, weights and measures are those of the United Kingdom, but Dutch measures are also used.

Trade. The chief products are diamonds from KIMBERLEY in Griqualand West, the wool of merino sheep and the mohair of Angora goats, feathers from the great ostrich farms near RIVERSDALE, OUDT-SHOORN, and in other southern districts, hides, and copper ore, from the mines of OOKIEP in Namaqualand brought for shipment by a mule-railway to PORT NOLLOTH. Maize ("mealies") and wheat are the chief crops; the vine is greatly cultivated in the south-western provinces, and a considerable quantity of tobacco is raised. The exports averaged for the years 1888—92 were worth more than 10 million pounds (of which 4 were for diamonds and 2·5 for wool and mohair), the imports

were 9 million, and the main trade of the colony was with the United Kingdom. There is a high **protective tariff** on imports, and a prohibitive **export duty** on ostriches and their eggs in the attempt to keep a monopoly of ostrich-farming. The **population** of Cape Colony is about $1\frac{1}{2}$ million, 380,000 being of European origin, most of them *Boers*, the Dutch-speaking descendants of the original settlers.

Communications. CAPE TOWN is 6700 miles from Southampton by the west coast route, traversed in from 15 to 18 days by the weekly mail steamers of the *Union Company* and the *Castle Line*, which call at Lisbon and Madeira. It was formerly an important station on the sea-route to India; much of the Australian and most of the New Zealand trade still passes that way. There are telegraph cables to Europe along both the west and the east coasts of Africa.

NATAL, on the east coast, is separated by the Drakenberg mountains from the fertile, grain-growing district of British Basuto Land in Cape Colony, and the Orange Free State. It has a population of 540,000, one-twelfth of whom are Europeans. Indian coolies work in the sugar-plantations, as the natives are too lazy. The *imports* are about 3.5 million, the *exports* 1.5 million pounds a year; much of this trade is transport for the inland republics. The chief exports are **wool**, **gold** from the Transvaal mines, **sugar**, coal and hides. Maize and mohair are also exported. Tea, coffee, tobacco, and cotton are grown to a certain extent, as well as sugar in the coast strip, maize and wheat on the slopes; and the upland regions are mainly pastoral. The port, DURBAN, is connected by rail with the town of VERULAM, a short distance to the north, and with the capital PIETERMARITZBURG, 50 miles inland, the line extending through the Klip-river **coal**-fields and NEWCASTLE, where coal is also mined, to the frontier of the Transvaal in the extreme north. A branch runs to Harismith in the Free State, and this line may be extended to Kimberley, 250 miles distant, almost due west.

The **British South Africa Company's Territory** extends from the border of British Bechuanaland northward, including *Khama's Country*, *Matabili Land*, and *Mashonaland*. A telegraph line runs from Kimberley through

MAFEKING, PALAPWE (Khama's capital), BULUWAYO (Matabili Land) to VICTORIA and SALISBURY (Mashonaland). The Kimberley railway is being pushed north, and already reaches MAFEKING; for the rest of the 800 miles to SALISBURY the only transport is by bullock-waggons or coaches. The country is in many places fit for agriculture and stock-raising, but the rush of population to it is caused by the deposits of gold in Mashonaland. The shortest way from the sea to SALISBURY (250 miles) is through Beira, in Portuguese East Africa, a railway from the head of navigation on the Pungwe river reaching to the border of British territory.

British Central Africa, to the south and west of Lake Nyasa, is under the charge of an Administrator appointed by the British Government, and has been developed by the African Lakes Company, and by missionaries. **Coffee**-planting has proved very successful. Access to the country is by the Chinde mouth of the Zambesi and the Shire river, the Murchison Rapids on which are passed by road. In these territories the sale to natives of drink and firearms is prohibited.

MAURITIUS, a densely peopled little island of nearly 400,000 inhabitants, lies in the Indian Ocean 2,300 miles north-east of Cape Colony, and is a port of call of the *Messageries Maritimes* steamers. The capital St Louis is the terminus of two short railways traversing extensive sugar plantations worked by Indian coolies. **Sugar**, practically the sole product and export, is produced to the value of $1\frac{1}{2}$ million pounds a year, and sent chiefly to India, Australia, and South Africa. A telegraph cable is laid to Seychelles, and thence to Zanzibar, connecting with Europe.

GAMBIA, SIERRA LEONE, GOLD COAST, LAGOS, and the **Niger Coast Protectorate**, are small Crown colonies on the west coast of northern tropical Africa with a united annual import of 1.7 million, and

exports of 1·8 million pounds. The *exports* are mainly forest produce, of which **palm-oil** and **kernels** are the staple; ground-nuts, kola-nuts, hides, india-rubber, gum, and bees-wax making up the remainder. The *imports* are **cotton-cloth**, **rum**, **firearms** and ammunition. The region is unhealthy, but the habits of the people, both traders and natives, are more fatal than the climate.

The **Royal Niger Company's Territory** comprises a wide strip of land on the lower reaches of the Niger and its great tributary the Benue, which are navigated by the Company's trading steamers, and it has the special right of trading with **Sokoto** and other native states of the western Sudan. **AKASSA** at the chief outlet of the Niger into the sea, **ASABA** some distance up the river, and **LOKOJA** at the confluence of the Benue, are three of the chief trading stations. The staples of trade are the same as those of the West African colonies.

British East Africa includes **IBEA**, the territory of the Imperial British East Africa Company, which is crossed by the equator. It has a fine harbour at **MOMBASA**, and the country in the interior, where the height above the sea is great, is capable of cultivation and grain-growing, and yields ivory. Beyond it lies **Uganda** to the north of the Victoria Nyanza, and the British sphere extends to the Nile. This region is still undeveloped.

ZANZIBAR, nominally under a Sultan, is a British protectorate. It includes the fertile **clove** and **coco-nut** bearing islands of Zanzibar and Pemba, with the great trade centre of **ZANZIBAR** on the former. This town does more trade than any other on the east coast of Africa, and is the centre for organizing expeditions and trading caravans into the interior, the ivory, india-rubber, etc., being brought there for sale.

CHAPTER XI. BRITISH POSSESSIONS IN AMERICA.

Falkland Islands. British Guiana. British Honduras. *West Indies* :—Trinidad, Jamaica, Barbados, Bahamas, Windward Islands, Leeward Islands. Bermuda. Newfoundland. *Dominion of Canada* :—Resources. Trade. Communications. Railways. The Provinces, with their resources and towns.

The **FALKLAND ISLANDS**, 300 miles east of the southern extremity of South America, have a population under 2,000; the peaty soil bears good grass, supporting 5,000 **cattle** and half a million **sheep**. The harbour, **STANLEY**, is a station for whaling and sealing vessels, and for the repair of ships damaged in rounding Cape Horn. It exports **wool** and **frozen meat**.

BRITISH GUIANA, about the size of the United Kingdom, is situated on the mainland of South America, bordering on Venezuela. **GEORGETOWN** on the Demerara river, with an enterprising and prosperous population of 53,000, is the capital and port. The climate is extremely hot. **Maize** is largely grown, but the chief crop is **sugarcane**. The total exports are worth $2\frac{1}{2}$ million pounds a year, of which $1\frac{1}{2}$ million represent sugar. **Gold** is abundant in the north-west of the colony, and within the last few years great advances have been made in mining. It is now next to sugar in importance as an export.

BRITISH HONDURAS in Central America exports **mahogany**, **log-wood** and **tropical fruits** from its capital, **BELIZE**, on the Caribbean Sea.

The **WEST INDIA ISLANDS** contain six British Colonies, most of them under the direct control of the Colonial Office. The exports and imports of the group balance each other at about 6 million pounds. The chief trade is with America, less than half being with British ports. There is a **high tariff** on imported goods in all; but the commodities taxed, and the rate, vary in each. In some islands there are **export duties** also.

The staple *export* has always been **sugar**; but other tropical productions, such as **cocoa**, **coffee** and **fruit**, are now being cultivated with great profit. British coinage, weights and measures are in use. There are fortnightly **steamers** of the "Royal Mail" service from Southampton to the West Indian ports and Brazil; occupying about 18 days on the passage. **Telegraph cables** are laid to the continents of North and South America, thus connecting with Europe. The **population** is mainly of slave-descended negroes, who cultivate their own ground; most of the plantation work is done by Indian coolies and Chinamen.

(a) **TRINIDAD**, off the mouth of the Orinoco, absorbs one-third of the West Indian trade, and has most commerce with Venezuela, the United States, and France. **PORT OF SPAIN** (34) is the capital and chief sea-port, possessing a fine natural harbour and railways to **SAN FERNANDO** and other towns. The export of **sugar**, which is manufactured at central factories, the canes being collected from the growers, is nearly half that of British Guiana. **Cocoa**, equal in value to the sugar, is the most characteristic product; **asphalt**, from the great Pitch Lake, and **coco-nuts** are largely exported. The island of **Tobago** is politically united with Trinidad.

(b) **JAMAICA**, in the Caribbean Sea, the largest and most fertile of the British West Indies, has a population of over half a million, only 14,000 of whom are of European origin. The chief productions are **fruit**, **dye-stuffs**, **coffee**, **sugar** and **rum**; but cocoa and spices are also of value. **KINGSTON** (50), the capital, on the south-east, has a magnificent harbour, which does half the trade of the island; it is connected by rail with the neighbouring sugar

estates, and the farming and forest districts of the north and west. There are several smaller sea-ports.

(c) **BARBADOS**, with 180,000 inhabitants crowded on an area of 166 square miles, is covered with cane plantations, and exports as much **sugar** as Trinidad; but the manufacture is wasteful, being carried on in small mills by the planters themselves. The chief harbour and capital **BRIDGETOWN** (20) is the terminus of a short railway, and is one of the most important centres for steamers in the West Indies.

(d) The **BAHAMAS** trading chiefly with the United States produce large quantities of fruit, chiefly **pineapples**. The plant yielding sisal-hemp is now largely cultivated, and **sponges** have long been a staple export.

(e) The **WINDWARD ISLANDS** form one colony and include the islands of Grenada, St Vincent, the Grenadines and St Lucia, each of which has its own trade system and tariff. Sugar, rum, cocoa and spices are the chief products.

(f) The **LEEWARD ISLANDS** are similarly constituted, and include Dominica, Antigua, the Virgin Islands, St Kitts, and Montserrat. The last named is the smallest of the group but yields a characteristic export in the shape of lime-fruit and the lime-juice prepared from it.

The **BERMUDA** Islands, midway between the West Indies and Canada and connected by cable with the latter, are market gardens for the great cities of eastern North America. Onions and potatoes are the chief exports.

NEWFOUNDLAND, a large island at the mouth of the Gulf of St Lawrence, is separated from Labrador (which is politically part of it) by the narrow strait of Belleisle. The population is almost entirely occupied with **fishing** off shore, and on the *Grand Banks* to the south-east of the island, and with **fish-curing** and the manufacture of cod-liver oil. The exports and imports amount to a little over 1 million pounds each. The United King-

dom, Portugal, and Brazil each take about one-fifth of the *exports*; then follow Spain, the West Indies, the United States and Canada. The *imports*, chiefly food and clothing, come in nearly equal proportion from Canada and the United Kingdom, and somewhat less from the United States. The capital ST JOHN'S (30), on the east coast, is the great fishing centre and the head-quarters of the Scottish sealing fleets when at work. There are important **copper** mines in Notre Dame Bay on the north-east.

CANADA.

The **DOMINION OF CANADA** is a confederation of provinces which were formerly separate colonies. The area is over 3 million square miles; and the population of nearly 5 millions, including 120,000 partially civilised or savage natives, is densest in the east. The **climate**, usually dry, is warm in summer, but very cold in winter. Snow lies from three to five months of the year, when, although the railways remain open, road traffic is mainly carried on by **sledges**. The rivers and canals are frozen during winter, and all ports, except those on the Pacific coast, and one or two on the Atlantic, are closed by ice. The climate is most severe in the interior, but on the Pacific coast it is as mild and moist as in Great Britain.

Resources. The chief resources of Canada were formerly **furs** and **lumber** (timber) and other forest products (e.g. potash, rosin and bark) obtained from the great forest belt of the eastern provinces. There are extensive woods still untouched on the Pacific slope; but the exports of farm produce are now worth twice as much as those of lumber. In order of value as exports they are **Cheese, Live-stock** and **Meat, Wheat** and **Flour, Fruit** and **Vegetables**. The **fisheries** are unrivalled both in the sea and inland waters. **Coal** is abundant on both coasts, and new mines in the north-west are being opened every year. There are very extensive **petroleum** fields. The most valuable metals produced in order of importance are **nickel, gold, copper** and **iron**.

Trade. Manufactures are **protected** by a **high tariff** on imported goods, and factories of various kinds flourish in the large eastern towns. The *exports* amounted in 1893 to 23 million pounds, and the *imports* to 26. Two-fifths of the total trade goes to the United Kingdom, and the same amount to the United States, the former taking more than half of the exports, the latter sending just half of the imports.

Communications. Canada does a large **shipping** trade, possessing 7000 registered vessels (including more than 900 steamers) of an aggregate tonnage of $1\frac{1}{2}$ millions. Several lines of steamers, of which the *Allan* and *Dominion* are the most important, run weekly from Liverpool or Glasgow to MONTREAL, through the Strait of Belleisle in summer (a distance of 2600 miles accomplished in 9 days or less), and in winter, when the St Lawrence is blocked by ice, to Portland (Maine), or HALIFAX, whence there are railways. A line of fast steamers is expected to reduce the time of this passage to 5 days. The St Lawrence has been dredged to allow ocean steamers to reach MONTREAL, 160 miles above QUEBEC. A system of ship canals to avoid the rapids of the St Lawrence admits vessels drawing 14 feet to the great lakes. The *Welland Canal* goes round Niagara Falls and connects Lake Ontario with Lake Erie, from which there is free passage through Lakes Huron and Michigan, and by the *Sault Ste Marie Canals* (one in Canada and one in United States territory) to Lake Superior, 2000 miles from the ocean. The great rivers Saskatchewan and Mackenzie, flowing to Hudson Bay and the Arctic Sea, contain nearly 4000 miles of navigable water-way in the heart of the continent, and steamers run on many of the large northern lakes.

Railways. There are about 15,000 miles of railway, mostly the property of private companies, and chiefly situated in the eastern provinces. The *Grand Trunk*, controlling about 5000 miles of line, is partly in the United States, the lines radiating from MONTREAL to Portland (Maine) on the east, and to Chicago on the west. The *Canadian Pacific*, with a somewhat greater mileage, runs west from QUEBEC for 3000 miles to VANCOUVER, opening up immense areas of new land for settlement. In conjunction with lines of Pacific steamers it forms the shortest way from Europe to Japan, China and New Zealand, and if the steamer service were made equal to that through the Suez Canal it would be the quickest route to Australia also. A proposal to run steamers specially adapted for ice navigation from Europe through Hudson Bay in connection with a railway from CHURCHILL to WINNIPEG would if carried out save 750 miles of the distance. The Canadian **telegraph** system comprises 30,000 miles of line, and the regulation of standard time for this purpose and for railways, is the same as that for the United States. The postal rates, the lighting and buoys of the coasts and the system of coinage are uniform with those of the great republic.

The province of *Nova Scotia* in the east produces 2½ million tons of **coal** a year; one of the chief coal-fields is at SYDNEY, in Cape Breton Island, close to LOUISBERG, the harbour nearest Europe. **Iron** is worked at several places, and nearly half the **gold** obtained in Canada is the output of this province. The **fisheries** on the coast are the chief source of wealth. HALIFAX (40), on one of the finest harbours in the world for size and safety, does a large foreign trade and has manufactures.

The adjoining provinces of *New Brunswick* and *Prince Edward's Island* are chiefly dependent on **lumbering** and **agriculture**, especially potato-growing, although fishing and lobster-tinning are leading industries. ST JOHN (40) contains cotton mills, exports timber, and carries on general trade.

Quebec Province, through which the St Lawrence runs, has a population mainly of French origin and speaking French. MONTREAL (220), on an island at the junction of the Ottawa and St Lawrence rivers, is the largest city of Canada, and has the greatest foreign trade; though 1000 miles from the Atlantic Ocean it receives nearly half the imports and ships nearly half the exports of the Dominion. **Grain** (towed in canal barges from KINGSTON, where it is collected from the far west), **flour**, ground in the city, **lumber**, **cheese**, and **butter**, are the chief exports. MONTREAL is the centre both of the waterways and railways of Canada. The *Richelieu canal* from Lake Champlain, giving access to the Hudson River and New York, opens opposite the city. There is a large industrial population engaged in textile factories, sugar refineries, etc.

QUEBEC (70) trades chiefly in **lumber** floated in rafts down the rivers from the interior. Its shipping trade has declined in favour of Montreal.

The province of *Ontario* stretches westward from the Ottawa river along the northern margin of the great lakes, and although there are the greatest **nickel** mines in the world at SUDBURY, **copper** and **silver** mines on the

shore of Lake Superior and large supplies of **petroleum**, it is mainly **agricultural**. TORONTO (180) on Lake Ontario, a great railway, industrial and commercial centre, conducts a large trade on the lakes. HAMILTON (50), at the west end of Lake Ontario, is an outlet for the grain-producing district of the fertile peninsula. OTTAWA (45), the centre of the Canadian lumbering trade, and the seat of the Dominion Parliament, is joined to MONTREAL (120 miles distant) by a canal used by shipping; the lumber rafts shoot the rapids and pass behind MONTREAL to QUEBEC. Another canal 130 miles long leads to KINGSTON on Lake Ontario. LONDON (30), the chief town of the populous peninsula between Lakes Ontario, Erie, and Huron, is connected by a close network of railways with all parts of Canada. PORT ARTHUR on Lake Superior is a grain-shipping port of the Pacific railway from WINNIPEG.

Manitoba province extends westward from Ontario along the United States boundary. It is a prairie country rapidly becoming occupied by wheatfields of vast extent. WINNIPEG (25), 1,100 miles from Montreal by the Pacific Railway, is in the centre of the Red River valley, the richest wheat-growing region in the world. Two railway lines run southward to the United States, while several short branches tap the surrounding country; all these are fully employed in carrying **wheat** for the British market.

The Pacific Railway runs west from Manitoba over the wide prairie and grazing lands of *Assiniboia* and *Alberta* through inexhaustible deposits of **coal**, which are now being mined at LETHERBRIDGE, on a branch line and at many other points. A line from REGINA (*Assiniboia*) runs north to PRINCE ALBERT on the Saskatchewan, opening up land suited for mixed farming; and from CALGARY (*Alberta*), in the ranching district at the base of the Rocky Mountains, another northern branch reaches EDMONTON farther up the same river. This is the starting point for the Hudson Bay Company's fur collecting stations in the far north. The main line crosses the Rocky Mountains and enters *British*

Columbia, the richest mineral province in the Dominion, and terminates at VANCOUVER, where fine docks have been built. VICTORIA (15), on Vancouver Island, is connected by a short railway with NANAIMO, the centre of a coal-mining region, whence coal is exported to San Francisco and China. ESQUIMAULT, close to VICTORIA, is a British naval coaling station. The **fisheries** of British Columbia, especially for **salmon**, are important; and many of the vessels belonging to VICTORIA carry on pelagic sealing in the North Pacific Ocean between Alaska and Japan. **Gold-mining** is steadily pursued and occupies a large number of Chinamen as well as white miners.

CHAPTER XII. THE UNITED STATES OF AMERICA.

Configuration. Climate. Waterways. Agriculture and live-stock. Coal. Ores. Political Divisions. Resources and towns, Atlantic States, Central States, Cordilleran States, Alaska. Railways. People. Government. Time. Trade. Shipping.

Configuration. The United States, with an area of $3\frac{1}{2}$ million square miles, occupy the whole breadth of the American continent between Canada and Mexico, stretching from 49° to 25° N. lat. The Atlantic coast-line is rocky and indented in the north, with many deep-water havens; south of Cape Cod the water becomes shallower, and harbours fewer, while from the mouth of the Delaware the shore is very low and navigation is hampered by a fringe of narrow bars or sand-banks which extend into the Gulf of Mexico. The steep and rocky Pacific coast has, as a rule, deep water close to it, but has only three very good harbours. In the moist Californian valleys and along the west coast there are belts of pine forest, but the western half of the continent is a land of high arid *plateaus*, diversified by river-cañons and ranges of lofty mountains running from north to south, with little or no rainfall. From the base of the Rocky Mountains, the region of *Great Plains*, treeless plateaus from 6,000 to 4,000 feet in elevation, covered naturally with rough grass, stretch eastward for 600 miles, merging in the fertile, though naturally treeless, *prairie* lands which pass into the still more fruitful *Mississippi valley*. This region, as well as the Alleghany or *Appalachian mountains* which bound it on the east, and the narrow *Atlantic plain* beyond, is richly wooded with a variety of timber.

The **climate** is semi-tropical in the south; over most of the area it is temperate, although colder than corresponding latitudes in Europe and with a greater range of temperature between summer and winter. *Tornadoes*, storms of tremendous intensity, sometimes pass over the central states, doing great damage to towns and forests; and the absence of east and west mountain ranges allows *cold winds* from the north to sweep the whole continent. Snow-storms also are more severe than in Canada.

The **waterway** of the *Great Lakes* and the St Lawrence forms the natural outlet for the produce of the northern states. The vast systems of the *Missouri* and *Mississippi* with their tributaries the *Ohio* and *Arkansas* drain two-fifths of the country into the Gulf of Mexico, and give 15,000 miles of navigation. The *Columbia* and *Sacramento* on the Pacific coast are only navigable for short distances. On the Atlantic slope the chief streams are the *Hudson*, *Delaware*, *Susquehanna* and *Potomac*. The Hudson river communicates at ALBANY by the *Champlain Canal* with Lake Champlain, and by the *Erie Canal* with the Great Lakes.

Agriculture employs nearly half the working population of the United States. **Maize** or Indian corn, known in America simply as *Corn*, is the staple grain, covering a total area equal to the entire British Islands. Its cultivation is carried on in all the States, but centres in those traversed by the Mississippi and Missouri before their junction; *Illinois*, *Iowa* and *Missouri* are preeminent. **Wheat**-fields equal in area to the whole of England and Wales occupy the farms of the northern central states around the great lakes, and the upper valleys of the Mississippi and Red River. Half of the wheat area of the United States lay in the states of *Kansas*, *Minnesota*, *California*, *North Dakota* and *Ohio* in 1892. **Oats** are grown chiefly in the north, over an area greater than all Ireland. **Barley** is only cultivated to the same extent as in the United Kingdom; the remaining cereals, rye and buckwheat in the northern states, and rice in *South Carolina*, are comparatively unimportant. The exports of wheat fell off from 151 million bushels in 1880 to 54 million in 1890, but in the same time the export of flour rose from 8 to 12 million barrels. In the southern states an area as large as Scotland is under **cotton**; *Texas*, *Georgia* and *Mississippi* are the chief plantation states and grow half the total yield of 8 million bales. In 1860, before the abolition of slavery, nine-tenths of the cotton crop were produced by negro labour, now more than one-half is raised by white workers. **Tobacco** is largely grown in the states of *Kentucky*, *Virginia*, and *North Carolina*. **Sugar** is produced from the **cane** in the low delta

lands of *Louisiana*, and in *Texas*, from **beets** in *California* and to a much less extent from **sorghum** stalks in *Kansas* and other central states, and from the sugar **maple** in the north-east. The prairies are being gradually planted with trees.

The number of swine and cattle kept in proportion to sheep is remarkable. The **cattle-ranches** of *Texas* and *Nebraska* contain enormous herds, the fate of which is either to be shipped from the Atlantic ports to Europe, or after fattening on the richer pastures of *Iowa* and *Illinois* to be slaughtered in the great stock-yards of the western meat-centres, and exported either frozen or tinned. **Swine** (hogs) are kept all over the country, but chiefly in the corn states *Iowa*, *Illinois* and *Missouri*. (Sheep-farming on a large scale is a leading occupation in *Texas* and *California*; but the wool-supply is not sufficient for the demand for home manufactures.)

Million acres under Crop, and million head of Live-stock.

	Maize.	Wheat.	Oats.	Cotton.	Cattle.	Sheep.	Swine.
1886	75	37	23	18·5	48	45	44
1893	72	34	27	19·5	53	45	45

Coal exists under vast areas of the country, and the seams are usually very thick and accessible, but the process of mining is more wasteful than in Europe. The most developed coal-field is the **Appalachian**, which stretches from *Pennsylvania* to *Alabama* along the Appalachian mountains, and yields nearly three-quarters of the coal raised in the States. *Pennsylvania* contains most of the productive mines both of **anthracite** and **common coal**; and as **iron-ore** and **limestone** are abundant in the same region it has become the chief state for iron and steel manufacture. This field is also largely worked in *Ohio*, *West Virginia*, *Maryland*, *Kentucky* and *Alabama*. The **central coal-field** lies in *Indiana*, *Kentucky*, and especially *Illinois*, which ranks next to *Pennsylvania* in coal production. The **western coal-field**, although largest, is least developed, it runs through *Iowa*, *Missouri*, *Kansas*, *Arkansas*, and *Texas*, along the slope of the great plateaus. A small detached field is found in the north-east of *Michigan*, and one still smaller in *Maryland*. Most of the **Rocky Mountain** states contain some coal measures and have great deposits of **lignite**. There is a large output of true coal in *Washington* state round Puget Sound. The north-west of *Pennsylvania* and south-west of *New York*, *Ohio* and *Indiana* contain the chief **petroleum** and **natural-gas** wells of the country and of the world.

Ores. Nearly half the **iron-ore** is mined in *Michigan* and *Wisconsin* between Lake Michigan and Lake Superior, the rest chiefly in *Alabama*, *Pennsylvania* and *New York*. The other great iron-making states are *Minnesota*, *Virginia*, *Tennessee* and *New Jersey*. The shores of Lake

Superior in northern *Michigan* yield more than one-third of the copper supply, chiefly from the famous Calumet and Hecla mine; *Montana* comes next, also with more than a third of the whole production, and *Arizona* is the only other state with a large output. One-third of the zinc produced comes from *Illinois*, most of the remainder from *Kansas* and *Missouri*. Immense deposits of tin-ore occur in the Black Hills, *South Dakota* and in *California*, but the product does not yet (1894) influence the market. Lead is mainly found along with silver in *Colorado*, and also in *Utah* and *Mississippi*. The precious metals abound in the Rocky Mountain and Pacific states. Gold, now chiefly mined from quartz, is produced mainly in *California*, *Colorado*, *South Dakota* and *Montana*, and silver in *Colorado*, *Montana*, *Utah*, and *Idaho*. Some salt is made on the coast by evaporating sea-water, but the chief supply is from the brine-wells bored in *Illinois*, *New York*, *Ohio*, and *Michigan*. The amount and value of the mineral produce are:—

	Coal.	Iron.	Lead.	Copper.	Silver.	Gold.
1886						
Thousand tons	101,000	5,700	120	70	1.1	0.053
Million Pounds	31	19	2.5	3.5	10.5	7
1891.						
Thousand tons	150,000	8,280	200	132	1.6	0.044
Million Pounds	38	26	3.5	7.7	15	6.6

Political Divisions. There are 45 states and 5 thinly peopled territories in the Union; no less than four of these are larger than the United Kingdom. They comprise over 2,500 counties, with more than 900 incorporated cities, and about 5,000 smaller towns and villages, all commercially important. Geographically, the country may be divided into the three great regions of the *Atlantic*, *Central*, *Cordilleran* and *Pacific States*.

The Northern Atlantic States include the old New England States (*Maine*, *New Hampshire*, *Vermont*, *Massachusetts*, *Rhode Island* and *Connecticut*), *New York*, *New Jersey* and *Pennsylvania*. This is the chief manufacturing region, and the northern states are great in lumbering and fishing. NEW YORK on Manhattan Island, separated by the Hudson from JERSEY CITY and joined to BROOKLYN by a huge suspension bridge over East river, is the centre of a dense city population of more than 2½ million. There are over 30 miles of water frontage, and the port ranks next to London and Liverpool.

More than half the exports of the States pass through it; **cotton** from the southern railways, **grain** by rail and canal from the collecting centres on the Great Lakes, **petroleum** in pipe-lines from the wells 300 miles inland, **cattle** and **provisions** from the far west, being the chief items. It receives two-thirds of the imports and distributes them by rail, river, and sea to all parts of the Union. The distance to Liverpool is 3,050 miles, which is covered by the fastest steamers in about 6 days, and by trading steamers in from 10 to 15. NEW YORK has numberless manufactories, is the head-quarters of the American printing and publishing trades, and one of the financial centres of the world. PHILADELPHIA (1000), at the junction of the Schuylkill and Delaware rivers in *Pennsylvania*, 96 miles from the sea, is on account of the proximity of **iron** and **coal**, the chief manufacturing and engineering city of the States. The export and import trade is carried on by ocean steamers, and one of the most complete railway and canal systems in the world radiates over *Pennsylvania*. BOSTON (450), *Massachusetts*, is built on a number of converging peninsulas in a bay of deep water. A large European trade is done in exports of **grain**, **cotton**, **animals** and **fish**, and in imports of raw material for manufactures. It ranks next to NEW YORK in foreign trade, although only about one-tenth of the total exports and imports passes through it. PORTLAND, *Maine*, is a winter harbour for the Liverpool and Montreal steamers. *New York* state contains OSWEGO and ROCHESTER, ports on Lake Ontario, and BUFFALO (250) on Lake Erie; while *Pennsylvania* has the small port of ERIE on the same lake. NEWARK (180), *New Jersey*, PROVIDENCE (130), *Rhode Island*, LOWELL and FALL RIVER, *Massachusetts*, MANCHESTER and CONCORD, *New Hampshire*, have large **cotton** and **woollen** factories; while ALBANY, SYRACUSE, and TROY in *New York* contain important engineering works. The twin cities of PITTSBURG and ALLEGHANY (340) on the navigable Ohio form the chief centre

of the Pennsylvanian iron production and manufacture; OIL CITY, about 90 miles farther north by rail, is in the middle of the great **petroleum** region, whence pipe-lines radiate in all directions. Natural gas has been much used for manufacturing purposes in this district. HARRISBURG on the Susquehanna, SCRANTON in the anthracite region of the north-east and READING, are iron manufacturing towns and railway centres in *Pennsylvania*. POTTSVILLE, north-east of READING is the centre of the most productive coal region in the state.

The Middle Atlantic States (*Delaware, Maryland, the District of Columbia, and Virginia*) have one great seaport, BALTIMORE (430), on Chesapeake Bay in *Maryland*. It has a large export trade chiefly in **cotton, petroleum, tobacco** and **grain**, and is a busy manufacturing town. WASHINGTON (230), *District of Columbia*, is the capital of the United States. WILMINGTON in *Delaware* is a sea-port with large cotton-mills; NORFOLK on Chesapeake Bay ships cotton and fruit. **Tobacco**, one of the chief crops in this group of states, is manufactured at LYNCHBURGH, *Virginia*.

The Southern Atlantic States comprise the tobacco, rice and cotton growing lands of *North and South Carolina, Georgia and Florida*. Here there are no large towns and few manufactures. The harbours of WILMINGTON in *North Carolina*, CHARLESTON in *South Carolina*, and SAVANNAH in *Georgia*, export large quantities of **cotton**. Phosphate rock for fertilisers has recently become an important export. Timber is shipped at PENSACOLA in *Florida*, but market-gardening and orange-growing are the chief industries of that state. In this group of states the negro population is equal to the whites, in *South Carolina* it is one-third greater.

The North-eastern Central States (*West Virginia, Ohio, Indiana, Illinois, Michigan, and Wisconsin*) have the Great Lakes on the north, and are bounded on all other sides by the waterways of the Ohio and Mississippi

CINCINNATI (300), the commercial centre of the Ohio valley, has large manufactories, and an enormous trade in **pork**. It has river navigation to NEW ORLEANS, and a canal 250 miles long runs to TOLEDO, a grain-shipping port on Lake Erie. The lake-port of CLEVELAND (260), has iron manufactures. INDIANAPOLIS (100), is a manufacturing town and important railway centre. The state of *Michigan*, with 1600 miles of lake-shore, has many busy harbours, of which DETROIT (200) is the most important. BAY CITY, on Saginaw Bay, is a centre of the American **lumber** trade, and has great **salt-wells**. Keweenaw peninsula contains the chief **copper** mines of America. CHICAGO (with suburbs 1100), in *Illinois* on the south-west corner of Lake Michigan, is the greatest inland city of America, and the chief port for the **wheat** and **lumber** trade on the lakes. The traffic in this harbour is enormous, greater than that of New York, and steamers of 2000 tons can sail direct to the ocean by the St Lawrence. More than a third of the population are Germans and one-fifth are Irish. The **pork**-packing and **meat**-canning factories consumed nearly $8\frac{1}{2}$ million pigs and $3\frac{1}{2}$ million cattle in 1891. There are extensive **iron** manufactures, including steel ship-building, and the city ranks next to NEW YORK in the book-trade. CHICAGO is the chief railway centre in the States, controlling more than 50,000 miles of line. One of its suburbs, PULLMAN (10), was built by the *Pullman Car Company* for their railway rolling-stock works. PEORIA, on the Illinois river, has valuable **coal**-mines. MILWAUKEE (200), a port on Lake Michigan, is the chief town of *Wisconsin*, and a great manufacturing centre.

The North-western Central States comprise *Minnesota* and *North Dakota* (sharing the rich wheat lands of the Red River Valley), *South Dakota* (mainly dependent on its mineral wealth), *Nebraska*, *Iowa*, *Kansas* (the central state), and *Missouri*. MINNEAPOLIS (160), and ST PAUL (130), on opposite banks of the Mississippi, at the

head of navigation, do an immense trade in flour milling and railway transport. DULUTH, the most westerly port of Lake Superior, ships grain brought by rail from the far west. OMAHA (140), in *Nebraska*, is a manufacturing and meat-packing city and railway junction. ST LOUIS (450) in *Missouri* on the Mississippi, below the junction of the Missouri and 1200 miles from NEW ORLEANS, is the chief emporium on the river, with a vast trade north and south by the river, and east and west by rail. At Iron Mountain and Pilot Knob near ST LOUIS there are productive iron mines, and lead is raised in many parts of the state of *Missouri*. KANSAS CITY (130), on the Missouri, is an agricultural centre, *Kansas*, in which one part of the city lies, being now the chief wheat-growing state; the town has also an extensive meat-packing trade. The states of this group are at present developing more rapidly than any other part of the world; the population of many of the large towns increased fourfold between 1880 and 1890.

The South-eastern Central States (*Kentucky, Tennessee, Mississippi, and Alabama*) lie east of the Mississippi river and south of the Ohio. In *Alabama* and *Mississippi* the negro population considerably out-numbers the white. LOUISVILLE (160), in *Kentucky* on the Ohio, does a large pork-packing and tobacco trade. VICKSBURG (*Mississippi*), a cotton shipping port 320 miles from NEW ORLEANS, is the highest point on the river for ocean steamers. MEMPHIS (*Tennessee*), the most important town on the Mississippi between NEW ORLEANS and ST LOUIS, is a great railway centre on account of its bridge across the river. MOBILE (*Alabama*) on the Gulf of Mexico, ships cotton and lumber. Great ironworks at BIRMINGHAM (*Alabama*), have caused the population of that town to increase tenfold between 1880 and 1890.

The South-western Central States are *Arkansas* and *Louisiana* west of the Mississippi, *Texas, Oklahoma Territory* and *Indian Territory*. NEW ORLEANS (240), 100 miles from the entrance to the Mississippi, in *Louis-*

iana, ranks next to NEW YORK in its export trade, but its imports are insignificant. The river is protected all the way from the sea to far past the city, by high banks or *levées* to prevent it from flooding the adjoining land, the level of which is lower than that of the water; and the channels are constantly dredged to avoid silting up. **Cotton**, the main export, and the miscellaneous produce of the central states brought down by river-steamers are transhipped here to ocean-going vessels. NEW ORLEANS is 2000 miles by sea from NEW YORK, and 4700 from Liverpool. A new railway bridge increases its importance for land trade to east and west. GALVESTON in *Texas* on the Gulf of Mexico is the chief outlet for the cotton, cattle, hides, and other commodities produced in the largest state in the Union.

The Rocky Mountain Cordilleran States comprise *Montana, Idaho, Wyoming, Colorado*, and the Territory of *New Mexico*. DENVER, a thriving smelting city is joined by rail to LEADVILLE, where there are great lead and **silver** mines. Artificial irrigation enables the dry soil of these states to yield profitable crops, although their chief wealth is in minerals.

The Plateau Cordilleran States include *Nevada, Arizona* and *Utah* the Mormon state. VIRGINIA CITY, a mining town on the Comstock Lode, and the Mormon settlement SALT LAKE CITY on the Central Pacific Railway, are the only towns of note. As most of the towns depend solely on mining their population fluctuates with every change in the silver market.

The Pacific Cordilleran States are *California, Oregon* and *Washington*. The fertile and sheltered Californian valley produces **wheat, grapes** and other fruit; and groves of mulberry trees utilised for **silk-culture**. PORTLAND (*Oregon*) and other harbours in the north export wheat, lumber, and canned salmon. SEATTLE (*Washington*), on Puget Sound, prospers on account of the neighbouring coal-fields, and exports much coal. SAN FRANCISCO (300), on a great land-locked bay of the Pacific, entered by the Golden

Gate, a passage one mile wide and five long, is the most important western harbour of America and the commercial centre of the Pacific States. **Gold, quicksilver, wheat, wool, and wine** are sent to it for export. The imports of **tea and silk** from China, and **manufactures** from the eastern states and Europe are even more valuable. Mail steamers from Japan, China, and Australia, connect with the Atlantic lines by the Pacific railways. The distance from SAN FRANCISCO by Cape Horn to NEW YORK is 15,900 miles, and to Liverpool 16,900; but if a canal should be cut through the isthmus of Central America the former passage will be shortened to 4200 and the latter to 8700 miles.

Alaska. The large thinly-peopled territory of *Alaska* has scarcely been opened to trade except for the fur-seal fisheries on its shores, and among its fringing islands, and some gold mining in the valley of the great river Yukon.

The **railway system** of the United States is the most remarkable in the world for its extent, 170,000 miles (in 1892), and the rapidity with which the lines are constructed. The older states on the east are covered with a close network of railways connecting the chief towns as in England. Most of the western lines were built through an unpeopled country, and towns afterwards grew up along them. The main through lines run east and west, transversely to the chief lines of river-communication. NEW YORK, CHICAGO, and ST LOUIS are the most important centres, to which through railways converge from all parts of the states. There are numerous junctions with the Canadian railways on the north and several with the Mexican on the south. The *Central Pacific*, with direct connection from NEW YORK and CHICAGO, runs from OMAHA westward through *Nebraska* and *Wyoming* over the Rocky Mountains, across the deserts of *Utah* and *Nevada*, and descends to OAKLAND, whence there is a ferry to SAN FRANCISCO. The distance of 3,300 miles between NEW YORK and SAN FRANCISCO is covered in about 5 days by express, and 10 days by goods trains. The *Northern Pacific* connects DULUTH on Lake Superior with the wheat areas of *Minnesota* and *North Dakota*, and pushes on, parallel to the Canadian Pacific, to the west coast at PORTLAND on the Columbia river. Railway extension is going on rapidly in this region, a network of branches steadily advancing westward along the main lines. The *Southern Pacific* runs from NEW ORLEANS through *Texas* and skirts the Mexican frontier to LOS ANGELOS on the coast of California.

People. The people of the United States are characterised by energy and enterprise; the country claims to do $\frac{1}{3}$ of the mining, $\frac{1}{4}$ of the manufacturing, and $\frac{1}{5}$ of the agriculture of the world, and to contain $\frac{1}{6}$ of the accumulated wealth of civilisation. In 1890, when the last census was taken, the population was 63 millions and its density 20 to the square mile. Most are of English origin, but the additions by immigration now consist mainly of Irish and Germans, more than 100,000 immigrants arriving from each country every year, and of Italians, Scandinavians, Austro-Hungarians and Russians, the total annual immigration averaging 500,000 people. **Slavery** was abolished in 1865 after the Civil War, and in 1890 there were $7\frac{1}{2}$ million coloured people in the southern states, nominally exercising equal rights with other citizens. The **immigration** of paupers and of Chinese is prohibited, and American citizens are not allowed to bring foreigners into the country on contract to do any specified work.

The **government** is Republican; each state has its own legislature making local laws, which may restrict certain branches of trade such as the drink traffic. A Congress of representatives from the States and delegates from the Territories regulates the external affairs of the country, retaining the sole right of fixing and levying the duties on imports, which are high. Taxes on exports or on commerce between states are forbidden by the constitution. As in Canada, a **Homesteads Law** entitles any citizen or intending citizen to receive 160 acres of land free from Government on condition that he settles upon, and cultivates it. The **army**, 25,000 men, is supplemented by a militia; the navy is small, and inadequate for defence in case of war.

The **coinage** has gold as a standard, the smaller coins are silver and nickel-bronze; the unit is the dollar, worth about 4s. and divided into 100 cents. Notes are issued both by Banks and by the Governments of the several States. The weights and measures are those of the United Kingdom but the hundredweight is taken as 100 lbs., and the "short ton" contains 2,000 lbs., while the gallon and bushel are slightly less than the British units of the same name.

The **post-office** is a department of the central government. Of 210,000 miles of **telegraph** line for public use (in 1892) 190,000 belong to the Western Union Telegraph Company. **Telephone** communication is used in all the towns; one company alone had 300,000 miles of telephone line in use in 1893.

Time. As the United States range through 58 degrees of longitude it is impossible to have one standard time. For railway and telegraph purposes both in the States and in Canada there are 5 standards, differing by 1 hour, each applicable in a belt 15° wide running north and south. The minutes are thus the same all over North America, but the hours differ, e.g. when the clock at WASHINGTON points to 12.20, that at ST LOUIS is 11.20, and on the Pacific coast 9.20.

American Standard Time.

Name of time:	Atlantic,	Eastern,	Central,	Mountain,	Pacific.
Central Meridian:	60° W.	75° W.	90° W.	105° W.	120° W.
Where used: e.g.	Halifax,	New York,	Chicago,	Denver,	San Francisco.
At Greenwich noon:	8 A.M.,	7 A.M.,	6 A.M.,	5 A.M.,	4 A.M.

Trade. The United States ranks third in the value of its external trade, which is about half that of the United Kingdom, little less than that of Germany, and equal to that of France. In 1886 138 million pounds worth of foreign goods were *imported* and 140 million pounds worth of native productions *exported*, eight-tenths being agricultural produce. In 1892 the imports were 173 million pounds and the exports 166 million, but the value of exports is usually the greater. The principle of **protection** is enforced by a **high tariff** on all commodities which can be produced in the States. Only certain raw materials, books not printed in English, and a few unimportant articles are admitted free. The United Kingdom receives freely half the exports of the United States, and sends one-quarter of the imports; Germany does about one-tenth of the trade both in imports and exports, and France rather less.

Chief Articles of Trade in million pounds sterling.

Exports,	1887	1893	Imports.	1887	1893
Raw Cotton	41	38	Textiles manufactured	28	33
Wheat and Flour	28	40	Sugar	15	24
Meat, Eggs, etc.	18	23	Coffee	11	16
Petroleum	9	8	Iron and Steel	10	7
Tobacco	6	5	Chemicals	8	10

Shipping. Only vessels built and registered in the United States are allowed to engage in river or **coasting trade**. The United States shipping amounted in 1892 to 24,000 vessels, with a capacity of 5 million tons, 6,400 of these vessels were steamers. Most of these vessels ply on the great lakes which are open for navigation on the average for about 230 days in the year. American shipbuilders are only beginning to build large ocean steamers, and four-fifths of the extensive foreign trade of the country is carried under foreign flags, British ships having the chief share. Nine-tenths of the foreign trade of the States is concentrated in the six sea-ports, NEW YORK, NEW ORLEANS, BOSTON, PHILADELPHIA, BALTIMORE, and SAN FRANCISCO. Mail steamers sail almost daily from the great Atlantic ports to Europe, and as the United States mails are sent by the fastest vessels there is constant competition in speed. The best ships of the *Cunard*, *White Star*, *American*, *Hamburg-American*, and *North German Lloyd* lines deliver the mails in London (by rail from an Irish port or from Southampton) within 7 days after leaving NEW YORK.

CHAPTER XIII. FRANCE.

Configuration. Agriculture. Minerals. Textiles and Manufacturing Towns. Sea-ports. (Paris. Rivers and Canals. Railways and Towns. Trade. Government. French possessions in Africa, America, Polynesia and Asia.

Configuration. The geographical position of France is particularly favourable for commerce, as the north-western coast runs nearly parallel to the south coast of England; the shallow west coast, with several estuaries, faces the Atlantic, and the south the Mediterranean. Except for the low hills of Normandy and Brittany, the north-western half of France is a **plain** under 600 feet in elevation, from which the land slopes up toward a rugged plateau in the centre, and to the Ardennes, Vosges, and Jura on the east. Four great navigable **rivers** give inland France access to the sea; the *Seine*, *Loire*, and *Garonne* flow westward over the plain to the Atlantic; the rapid *Rhone*, in a deep valley between the Cevennes (bounding the central plateau) and the Alps (which rise in the south-east of France), enters the Mediterranean. The **climate** is temperate; warm on the southern slope, mild with a considerable rainfall over the western plains, but more extreme and drier in the interior.

Agriculture. Four-fifths of the surface is cultivable land divided up into very small farms worked, as a rule, by peasant-proprietors. **Wheat**, the chief grain-crop, grows in all parts of the country, but especially north of the Seine; **oats** are most cultivated in the north and north-east; **buckwheat** in the north-east, while **rye** is the characteristic grain of the central plateau, and **maize** of the Rhone valley and south-western plains. The export of cereals was formerly considerable, but for the

last ten years the imports have been in excess. The **vine** is the typical cultivated plant; there are vineyards, and wine is made, in all parts of France except a strip about 100 miles wide parallel to the north-west coast (where orchards and cider-making predominate) and on the barren central plateau. Before the *phylloxera* had wrought such devastation the annual wine-harvest of France reached 1800 million gallons, but since 1884 it has varied from about 500 to about 1000 million gallons.

The chief wine-producing departments are *Gironde*, south of the Gironde estuary, *Hérault* and *Aude* on the Mediterranean, *Puy de Dôme* in the centre, and the eastern districts around *Côte d'Or* (Burgundy). *Charente-Inférieure*, formerly of the first rank, has suffered most severely from phylloxera. A large amount of wine has to be brought from Spain, Italy, and Algeria for home consumption, and quantities of wine are made for export from dried raisins imported from southern Europe. The **olive** and **mulberry** trees are cultivated in the south. The fertile northern departments yield two-thirds of the **beet** crop, which makes France nearly independent of foreign **sugar**, most of the **colza** for oil-making, and more than half the **flax** produced in the country. **Tobacco**, the growth and sale of which are Government monopolies, is produced almost exclusively in the valley of the Garonne and in Algeria. **Wood** is the principal domestic **fuel** in France; forests, under Government control, occupy 21 million acres, mainly in the east and south-west. The total area of the country is 132 million acres.

Million acres under crops, 1891—92.

Wheat.	Oats.	Vines.	Rye.	Potatoes.	Barley.	Maize.	Beets.
16	10	4·5	4·5	4·5	2·5	1·5	1·5

Cattle are fed on the grassy meadows of the western plains, and **sheep** on the barer pasturage of the central plateau, but the quality of the animals is inferior. Much of the agricultural labour is done by **oxen**, and in the south **donkeys** and mules are often used instead of horses. **Fishing** occupies 150,000 men along the shores; larger vessels visit the banks of Newfoundland and Iceland for cod. **Oyster-culture** has become an important industry on the sandy Atlantic coast, especially at ARCAÇON.

Minerals. All mining operations are conducted by the direct authority and under the inspection of the Government Office of Public Works. The annual production of coal is 26 million tons, one-half of which comes from the mines round ANZIN in the *Valenciennes* or Franco-Belgian field in the north. The *Central* coal-fields come next in importance, including the *Loire* coal-field and mines about

ST ETIENNE, LE CREUSOT, and ALAIS. There are sixteen other small coal-fields scattered over the country producing 5 million tons among them. There is a yearly import equal to about half the production of the country from Belgium, Britain, and Germany.

Iron is abundant, nearly 2 million tons of pig-iron being produced annually almost entirely from French ore. LILLE (200) on the *Valenciennes* coal-field is equally engaged in iron-making and textile manufactures; DENAIN and ANZIN, near it, have also an active iron and coal trade, although the ore in the neighbourhood being nearly exhausted supplies have to be brought from other parts of France. The blast-furnaces and steel-works of ST ETIENNE (130) and of LE CREUSOT, a small town built round an immense iron-foundry and engineering establishment which turns out most of the rails and locomotives required for the French railways, derive much of their ore from the mines of the central district. *Meurthe-et-Moselle* is the department with the greatest iron-mines, producing nearly half of the French supply, but it is far from coal. NANCY (90), the largest town in that district, contains cotton mills and engineering works. **Lead**, found in the mountains of Auvergne in central France, is the only other metal much worked. There are salt-mines on the borders of Switzerland, Germany, and Spain, but two-thirds of the supply comes from the salt marshes (*salines*) of the flat shores of the Bay of Biscay and the Mediterranean.

Textiles. Cotton, woollen and silk factories employ each rather more than 100,000 hands. **Woollen** goods take the first place amongst French exports, and as the home grown wool is insufficient about three-quarters of the raw material necessary is imported. This industry is localised in the north; the department *Nord*, with the towns of ROUBAIX (110), TOURCOING and FOURMIES, containing about one-third of the whole. SEDAN on the frontier of Germany, REIMS (100), a wine-town in *Champagne*, and ELBEUF, on the Seine, are other wool centres. The silk-

worm breeding in the Rhone valley does not supply sufficient material for the silk manufacture which is the staple trade of the district, and large quantities of raw silk are imported from Italy and China. Three-quarters of the trade is carried on near LYONS (400) on the Rhone, in the main line of communication between PARIS and MARSEILLES. It is the second commercial centre of France, and the greatest silk-market in the world. ST ETIENNE contains the most extensive ribbon factories, and various branches of the silk industry are pursued in GRENOBLE and other parts of the country. A large quantity of raw cotton is imported and manufactured for home use and for export. The two northern departments of *Nord* and *Seine-Inférieure* contain one-half of the factories. ROUEN (110), near the mouth of the Seine, is the French Manchester with the chief cotton mills of the country; LILLE, which is also the centre of the linen trade, and AMIENS (80), with velvet factories, manufacture much cotton.

Lace making, a characteristic French industry, employs great numbers of women at their own homes; the chief collecting centres are ALENÇONS and BAYEUX in Normandy, BAILLEUL near LILLE, and CALAIS.

Porcelain is made at LIMOGES (70), in the centre of France, and fine art-pottery at SÈVRES, near PARIS.

Sea-ports. MARSEILLES (400) on the Mediterranean, with a movement of 9 million tons, is the chief harbour, practically monopolising the French traffic with Mediterranean ports, and through the Suez Canal with India, China, and Australia. It is the third town in France for size and is the seat of many important industries, especially soap-making. HAVRE (*Le Havre*, 110), at the mouth of the Seine, in the English Channel, is the second sea-port, with an annual movement of 6 million tons; the import trade is chiefly in grain and raw materials from America for the northern manufacturing districts. HAVRE was formerly the port of ROUEN, 75 miles up the Seine, but the river has been deepened to admit large steamers. BORDEAUX

(250), on the Garonne, at the head of the fine estuary of Gironde, is the chief wine exporting town of France; PAULLAC nearer the sea is its deep-water harbour. It imports coal, South American produce, and wine from Portugal, and exports wine and brandy. DUNKIRK, which is the third French port in order of trade, CALAIS, BOULOGNE, and DIEPPE trade with English and North Sea ports. ST NAZAIRE, at the mouth of the Loire, and NANTES (130), 30 miles up the river, are less extensive sea-ports. CETTE on the Mediterranean has a large wine export and trade with Spain.

PARIS (2500), to which canals, canalised rivers, and railways, converge from all sides, is the capital, and the largest town, except London, in the world. PARIS in commerce and politics is the very heart of France; in taste and fashion it leads all countries. Jewellery, artistic metal-work, fine leather-goods, artificial flowers and millinery are amongst the more characteristic manufactures. The *Bourse* or Stock Exchange ranks after those of London and Berlin. The city is surrounded by fortifications through which the railways pass out and radiate over the country.

The **Canal and River system** of France is very complete, the waterways competing successfully in the transport of material with the railways. There are 5000 miles of navigable rivers and 3000 of canals. The *Canal du Midi*, 150 miles long, runs south-eastward from BORDEAUX along the valley of the Garonne to TOULOUSE (150), and thence down the valley between the Pyrenees and the central plateau to CETTE, saving a sea-passage of 2000 miles. It is proposed to construct a ship-canal for large vessels along this line. The *Rhone* is joined, through its tributary the Saone, by a canal passing between the Vosges and Jura mountains to the Rhine, by another crossing the central plateau to the *Loire*, and by a third to the *Seine*. The industrial region in the north of France is covered by a network of waterways connecting its rivers with those of Germany, Belgium and Holland, and here the canal traffic is heaviest.

Railways. There are 21,000 miles of railway, divided amongst six great companies, whose lines scarcely overlap. The *Northern* occupies the section between BOULOGNE and the frontier of Germany, with connections to Berlin, St Petersburg, Brussels, and by the Calais-Dover passage to London (8 hours from PARIS). It forms a network over the busiest mining, manufacturing and agricultural district

of the country. The *Western* sends one main line down the Seine valley through ROUEN to HAVRE and DIEPPE, another to the naval harbour of CHERBOURG in Normandy, and a third to that of BREST in Brittany, with branches to the chief intervening towns. The *Paris-Orleans* serves the area between the Loire and the Garonne, including the wine-producing district of *Charente*; the chief centres of traffic are ORLEANS, TOURS and POITIERS. At BORDEAUX it connects with the *Southern* lines, one of which runs into Spain at BAYONNE, leading to Madrid and Lisbon, another by TOULOUSE to CETTE, MONTPELLIER and Spain. The *Paris Lyons and Mediterranean* is next in amount of traffic to the *Northern*, and has two lines to the south traversing the vine-growing districts of Burgundy with the wine-centres DIJON and MACON, and the silk and iron making towns of the Upper Loire and Rhone valleys. The main line runs south-east to DIJON (whence a branch leads to Berne), turns south down the valley of the Saone to MACON (the junction for the Mont Cenis tunnel route to Italy), and on by LYONS to MARSEILLES and Italy. The *Eastern* railway brings the vineyards of *Champagne*, and the iron-works of *Meurthe-et-Moselle* into communication with the capital. One line through CHALONS, a wine centre, and NANCY, enters Germany by Avricourt; another passing the fortifications of BELFORT goes into Alsace and Switzerland, connecting with Austria by the Arlberg tunnel, and with Italy by the St Gothard tunnel.

The telegraph system embraces 60,000 miles of line. The time of the meridian of Paris, 10 minutes in advance of Greenwich time, is used throughout France and Algeria.

Trade. The trade in grain and wine, the most important articles classed under food and drink, varies with the harvest. In 1882 the grain imports cost 20, the wine 13; in 1886 the value of grain required was only 10, but of wine 20 million pounds, and in 1891 again grain imports cost 21 and wine 16. The export of wine is nearly constant at 10 million pounds. The chief imports of raw material are silk and wool, each costing about 13, and the chief exports are woollens worth 12 million pounds and silk manufactures worth 10.

Trade of France in million pounds sterling.

	Raw Materials.		Food and Drink.		Manufactures.		Total.	
	1886	1891	1886	1891	1886	1891	1886	1891
Imports	80	96	80	66	25	28	185	237
Exports	30	33	40	32	70	77	140	190

The French mercantile marine only carries one-third of the French commerce. The United Kingdom stands first both in the export and import trade of France, receiving one-quarter of the exports, and sending one-tenth of the imports. Belgium, Germany and the United States rank next in order. There is a partial recognition of free-trade prin-

ciples by **commercial treaties** with the United Kingdom and some other countries; but even to these the **tariff** on imported goods is high. Most of the towns in France levy a small tax (*octroi*) on goods brought within the gates, whether of native or foreign production.

Government. At the census of 1891 the area of continental France was 207,000 square miles, and the population 38 millions, giving a density of 185 to the square mile. The country is divided into 87 **departments**, but an older division into provinces is often used popularly. The **Government** is republican, and every man has a vote. Agricultural, commercial, and technical **schools** are provided by the State in the chief centres of industry, and primary education is compulsory. The **people** are distinguished by their vivacity, enthusiasm, and good taste, and for the elegance and artistic finish of their manufactures. The heavy taxation necessary to maintain a standing **army** of 500,000 men, forts along the land frontiers, and a large navy, which ranks next to the British, and the compulsory military service of all men over 20, are obstacles to industrial success.

The coinage has a gold standard, the unit being the **franc** (valued at $9\frac{1}{2}d.$, or $25 = \text{£}1$) divided into 100 centimes. The *sou* (5 centimes = $\frac{1}{2}d.$) is used as a unit for small sums. The weights and measures are those of the **metric system**.

Possessions in Africa. **ALGERIA** on the north coast of Africa, with the two active sea-ports of **ALGIERS** (70) and **ORAN** (60), is politically part of France, and the adjacent country of **TUNIS** with its capital and port **TUNIS** (120) is a protected state. The chief exports from these countries are **grain, fruit, wine, iron ore, wool** and **alfa** (esparto grass). South of the settled departments of Algeria, French control spreads over a vast extent of the Sahara, the rim of which has been rendered of commercial value by boring artesian wells and planting **date-palms**. The French possession of **SENEGAMBIA** embraces the upper Niger, including the trading town of **TIMBUKTU**, and extends to the western shore of Lake Chad and the Algerian desert. **FRENCH CONGO** is a vast territory in equatorial west Africa reaching from the Congo river to Lake Chad; and altogether, including the protectorate of **MADAGASCAR**, the French claims in Africa amount to more than 2 million square miles.

Possessions in America and Oceania. **ST**

PIERRE and **MIQUELON**, small islands serving as fishing stations off Newfoundland; **GUADALOUPE** and **MARTINIQUE** in the West Indies, producing sugar and cocoa; and **FRENCH GUIANA** with gold mines, are the only possessions in America. **NEW CALEDONIA**, midway between Australia and Fiji, a convict settlement, exporting coffee and nickel-ore; **TAHITI** with other islands in the Pacific; and **REUNION**, in the Indian Ocean, growing sugar, coffee, and vanilla, are French colonies.

Possessions in Asia. **PONDICHERRY** in India, south of Madras, ships coolies to the plantations of other tropical colonies. The vast Colonies and protected states of French **INDO-CHINA**, comprising *Cochinchina*, *Cambodia*, *Annam* and *Tonkin*, with the chief town **SAIGON** (70), a fortified commercial harbour, yield an important supply of rice, spice and other products, and form a valuable market for French manufactures.

CHAPTER XIV.

THE GERMAN EMPIRE. (*Deutsches Reich.*)

Position. Configuration. Agriculture. Minerals. Manufactures. Towns of the Ruhr coal-field, of south-western Germany, and of the Silesian and Saxon coal-fields. Sea-ports. Berlin. Railways. Government. Trade. Colonies.

Position. The German Empire has the most central position in Europe; Denmark adjoins it on the north, Russia on the east, Austria and Switzerland on the south, France, Belgium, and Holland on the west. The only sea boundaries are the North Sea from Holland to Denmark, and the Baltic from Denmark to Russia.

Configuration. The **coasts** are extremely shallow and beset with sandbanks, but are well marked by buoys and lights. The *Eider canal*, for small vessels, across Jutland, joins the North Sea and the Baltic, and is now being supplemented by a ship-canal, which will admit the largest steamers. The whole south of Germany is mountainous, but the northern half from Holland to Russia is a wide heathy **plain**. Six great navigable **rivers** traverse the country. The *Danube* flows east through southern Germany into Austria. The *Rhine*, the chief water-highway of Germany, is joined to the Rhone, Seine, and Danube by canals. It flows west from the Lake of Constance, turns north through a narrow and extremely fertile plain between the Black Forest and the Vosges, then swerves westward at MAINZ and passes through a picturesque gorge into the northern plain. The *Weser* and *Elbe* flow north-west to the North Sea, and the *Oder* and *Vistula* northward to the Baltic. The **climate** varies according to the height of the land and distance from the sea, being mildest in the north-west, and most extreme in the east.

Agriculture. The northern plain of Germany, although not naturally fertile, produces immense crops of **potatoes** and **rye**, which form the

chief food of the people. **Oats** and **wheat** are also grown largely, the latter especially in *Silesia*, *East Prussia*, and the *Rhine Provinces*. The imports of wheat and rye exceed the exports, but large quantities of potatoes are sent abroad, the annual harvest of these tubers being 25 million tons.

Million acres under crops, 1891—92.

Rye.	Oats.	Potatoes.	Wheat.	Barley.
14	10	7·2	4·7	4·5

The **sugar beet**, the chief industrial plant, is most largely grown in the Prussian provinces of *Saxony* and *Silesia*, where sugar is manufactured; the German production of sugar averages 1½ million tons per annum. **Flax** ranks next in importance in the same provinces, and along the Baltic toward Russia. **Hops** are grown mainly in the south, especially in *Bavaria*, for the great breweries of MUNICH (*München*, 350), the head-quarters of the German beer-trade. The **vine** is cultivated for wine-making in the plain of the Upper Rhine, and on the terraced slopes of the tributary valleys. **Fruit** and **tobacco** are also largely grown in the same region. One-fifth of the surface of Prussia, and one-third of southern Germany, are covered with **forests** under Government control, which supply the domestic fuel of the country and timber for export.

Cattle-rearing is the leading industry of *Schleswig-Holstein*; most **sheep** are raised in the north of *Prussia*, but the finest **wool** is obtained in *Saxony*; **horses** are bred for the army in *East Prussia*, and **swine** are kept principally in *Westphalia*. Dairy produce is largely exported.

Minerals. There are extensive deposits of **mineral fuel** in the three coal-fields of the *Ruhr* valley in *Westphalia*, *Upper Silesia*, and *Saxony*, where the density of the population comes to a maximum (over 500 to the square mile); and a few detached coal areas, producing in all 70 million tons per annum. About 20 million tons of **lignite** are also raised. **Iron-ore** usually occurs in the same localities, thus fixing the sites of the great metal-working and manufacturing towns. Over 4½ million tons of pig-iron are produced annually, Germany ranking next to the United States and the United Kingdom in this industry. The mines of the *Erzgebirge* near FREIBERG in *Saxony*, and those of the *Harz*, make Germany the first **silver**-producing nation in Europe. *Upper Silesia* has the largest output of **zinc** in the world; the *Harz* and *Erz* mountains also contain ores of **copper**, **lead**, and **tin** which have been worked for centuries and are still richly productive. Mines in many parts of the country afford a plentiful supply of **salt**; those at STASSFURT are especially remarkable, yielding potash salts as well.

Manufactures. Iron and steel are first in value, then textile fabrics—cotton, woollen, linen and silk—glass (especially scientific apparatus),

porcelain and paper. In the production of fine chemicals, dyes, and drugs Germany has no rival. Ships are built at HAMBURG, and at most of the Baltic ports.

Towns of the Ruhr Coal-field. The coal-field of the Ruhr in *Westphalia* is the busiest district in Germany. The outlying towns of BARMEN and ELBERFELD (240), with extensive **cotton mills**, silk factories, and iron-works, are the largest of the district and are linked by a chain of industrial villages to the river-port DUSSELDORF (150), about 20 miles distant, itself the focus of the trade of the Lower Rhine. A canal from the Rhine to the Ems will from 1895 admit of Ruhr coal being sent cheaply to the sea, and reduce imports from England. DORTMUND (90) has the chief coal and iron mines. ESSEN (80) is the seat of Krupp's works, world-famed for **cast-steel** goods and cannon, and in extent comparable only to those of Le Creusot and Elswick. DUISBERG (60), on the Rhine, has cloth factories. SOLINGEN and REMSCHEID are the chief iron-working and cutlery towns of the district. KREFELD (105) has recently become the centre of German **silk-weaving** and is a rival to Lyons in this industry.

Towns of South-western Germany. COLOGNE (*Köln*, 280) is prosperous through the steamer traffic on the Rhine, and the frontier railway transport. It contains sugar-refineries, cotton mills and manufactories of **Eau-de-Cologne**. AACHEN (*Aix-la-Chapelle*, 100), on an extension of the Franco-Belgian coal-field, is engaged in **woollen-weaving**. FRANKFORT-on-the-Main (180), one of the first financial towns in Europe, concentrates the commerce of south-western Germany, most of which passes through MAINZ (*Mayence*, 70) at the junction of the Maine and Rhine. MANNHEIM (80) at the junction of the Neckar is the highest point reached by steamers of 1000 tons. STRASSBURG (120), with breweries, tobacco factories, and **goose-liver** potting works, and MÜLHAUSEN (80), the centre of the **cotton** trade, are the chief towns of *Alsace-Lorraine*, which formerly belonged to France.

STUTTGART (140) in *Württemberg*, on the high land midway between the Rhine and the Danube, is a railway centre, and has an important publishing trade and horse market. NÜRNBERG (*Nuremberg*, 140), with a fine commercial situation in *Bavaria*, is far from coal-mines, and largely engaged in the manufacture of fine metal work, dyes, pencils and wooden toys.

Towns of the Silesian Coal-fields. These coal-fields, extending into Austria and Russia, are second in importance but nearest BERLIN, to which coal is brought by the Oder and its canal system. BRESLAU (340), on the Oder, is the metropolis of a rich agricultural, manufacturing and mining district. GÖRLITZ (60) has great woollen factories; KÖNIGSHUTTE, BEUTHEN and GLEIWITZ in the extreme south-east are busy mining towns, sending out coal, iron and zinc. HIRSCHBERG contains (next to BIELEFELD in *Westphalia*) the largest linen industry of Germany.

Towns of the Saxon Coal-fields. The mining district of Saxony ranks third in coal but first in metals. In the Prussian *province* of Saxony, which contains the mines of the Harz mountains, MAGDEBURG (200), on the Elbe, with extensive sugar refineries, is the commercial centre of a group of towns manufacturing sugar, spirits, and chemicals, and mining lignite and rock-salt. HALLE (100), on the Saale, has also large factories and salt-works. In the *kingdom* of Saxony DRESDEN (290), on the Elbe, carries on numerous manufactures, including photographic materials; MEISSEN, near it, has great porcelain works producing "Dresden ware." The commerce of LEIPZIG (360) is stimulated by annual fairs at which accumulations of leather, furs and books change hands. There is more printing and publishing done here than in any other town in the world, and corresponding activity in type-founding and bookbinding. It is the third city of Germany in commercial importance, BERLIN and HAMBURG alone coming before it. CHEMNITZ (140) is well called

the *Saxon Manchester* on account of the number of **cotton** factories and engineering works it contains; ZWICKAU to the south-west has the largest **collieries** and iron-works of the district. The inhabitants of the numerous smaller towns are engaged in mining iron, silver, copper and lead from the *Erzgebirge*, and in various branches of textile industry.

BRUNSWICK (100), and HANOVER (165), with lignite pits, lie between the Saxon and Westphalian industrial districts; they produce **sugar** and **textile** fabrics.

Sea-ports. HAMBURG (with suburbs 600), on the river Elbe, 60 miles from the sea, can be reached at high tide by the largest steamers, and is the first trading harbour on the Continent, having a movement of over 10 million tons. The port is continuous with that of ALTONA (140). A small part of the harbour retains **free-port** privileges, being outside the *Zollverein*. The port of BREMEN (130), 50 miles up the Weser, is less accessible, but much of the trade is done at BREMERHAVEN, a subsidiary port at the mouth of the river. BREMEN is a great **tobacco** market. It is the head-quarters of the *North German (Norddeutscher) Lloyd Steamship Company*, and most of the German **emigrants** pass through it or HAMBURG. WILHELMSHAVEN on the North Sea, and KIEL on the Baltic, are naval stations. The **Baltic** usually ceases to be navigable in November on account of **ice**, but some of the German harbours remain open in mild winters. The use of ice-breaking steamers has extended their usefulness. STETTIN (120), on the Oder, the chief Baltic port, is the nearest sea-port to BERLIN, 80 miles by rail, and the natural outlet for the forest province of *Pommerania*, and the mining district of *Silesia*. Its deep-water harbour SWINEMÜNDE stands on the sea-margin. DANZIG (120), at the mouth of the Vistula, and KOENIGSBERG (160), farther east on the Pregel, are sea-ports exporting **oats**, **flax**, **rye**, **timber**, and **amber**, and the latter imports large quantities of tea for Russia.

BERLIN (1580), on a sandy and infertile plain, equi-

distant between FRANKFORT-on-the-Oder and MAGDEBURG, on the Elbe, is the seat of the imperial government, and its Exchange is second only to that of London. Coal and iron are brought from *Silesia* and elsewhere for its great engineering works and textile factories. The manufacture of electrical apparatus, and artistic metal work, is a special feature; and there are great breweries.

Railways. BERLIN is the centre of the railways and canals of the Northern plain, and now of Germany, but there is no unity of plan in the railway system. One through line runs east from BERLIN to KOENIGSBERG and on to Russia, another through FRANKFORT-on-the-Oder to BRESLAU and Austria. The railway to DRESDEN connects with the Austrian line to Prague and Vienna; that going south-east to LEIPZIG and MUNICH communicates with Italy by the Brenner Pass through the Austrian province of Tyrol. BERLIN has direct lines running west to HAMBURG, to BREMEN, through HANOVER to Rotterdam, through MAGDEBURG, COLOGNE, and AACHEN to Brussels, and through HALLE, ERFURT, and FRANKFORT-on-the-Main to Paris. The most important lines in the south are those following each bank of the Rhine from COLOGNE to Basel on the Swiss frontier, the outlet of the Westphalian manufacturing district to Italy through Switzerland and the St Gothard Tunnel.

Government. The German Empire is a confederation of 26 separate states, most of them governed for local affairs by their own monarch and parliament. The area of the empire is 210,000 square miles, and the population 49½ millions, or 237 to the square mile. Two-thirds of the area and of the people belong to the kingdom of *Prussia* (*Preussen*), occupying the north of Germany; the kingdoms of *Bavaria* (*Bayern*), *Saxony* (*Sachsen*), and *Württemberg*, the grand duchy of *Baden*, and the imperial province of *Alsace-Lorraine* (*Elsass-Lothringen*), have each above 1 million inhabitants; the other 20 little scattered states contain 5 million people between them. The Imperial Government consists of two houses, the **Bundesrath** of delegates from the various governments, and the **Reichstag** of members elected by the people. Permanent Committees of the Bundesrath take charge of the external commerce and tariffs, the railways and the post-office for the whole empire. There are 27,000 miles of railway line, almost all belonging to the State, and 73,000 miles of telegraph line. The metric system of weights and measures is in use, the meter-centner of 50 kilograms or 110 lbs. being the unit most often employed. The *mark* (value 1s.), divided into 100 pfennigs, is the unit of coinage, which has gold as a standard. The **army**, in which all the men of the empire must serve, consists of 500,000

in time of peace, and 3 million might be called out in case of war. Education is compulsory, and the system of **technical education** is more complete than that of any other country. The general application of scientific principles to manufacturing operations, the readiness of the merchants to suit the taste of customers, together with the industry, patience, and intelligence of the workmen, have led recently to a great development of German trade. The rigorous rule of the government and the amount of **police interference** in business and private matters do not enhance these advantages.

Trade. The **Zollverein** or Customs League of Germany and Luxemburg applies to all parts of the empire except a small part of HAMBURG, which retains its old free-port privileges but practically forms only a huge bonded warehouse. German trade policy is that of **protection**. The *exports* of home produce and the *imports* of goods for consumption in the *Zollverein* for the five years before 1886 balanced almost exactly at about 160 million pounds; but the admission of HAMBURG has greatly increased this sum, the average trade for the five years 1888—1892 being 250 million pounds of imports and 225 of exports. On account of the difficulty of internal transit in some parts of Germany and the number of foreign countries it touches, one part of the empire often exports commodities that another part requires to import; *e.g.* North Germany exports wheat to England, Bavaria imports it from Austria.

Trade of Zollverein in million pounds.

Textiles.		Food & Drink.		Metals.		Leather.		Chemicals.		Machinery.	
1886	1891	1886	1891	1886	1891	1886	1891	1886	1891	1886	1891
48	51	33	63	9	22	9	10	10	13	2	3
Exports.											
50	48	19	20	18	27	12	11	11	14	6	8

The greatest amount of import and export trade is with the United Kingdom, then, especially for imports, with Austria-Hungary and Russia. The chief imports from the United Kingdom are **cotton** and **woollen** manufactures, **iron**, machinery, herring, and coal, of an average value of 26 million pounds; the exports sent in return include **sugar**, **grain**, **eggs**, timber and animal products, worth on the average 18 million pounds. The large British import of German sugar (over 9 million pounds worth in 1891 and 1892) has greatly damaged the West Indian colonies.

Colonies. There are no German colonies of great commercial importance, although the tropical protectorates may in time come to be of value. In Africa they consist of the small **TOGO** district on the Gulf of Guinea, the **CAMEROONS** between the British Niger Territories and

French Congo, a large stretch of barren land in South-West Africa inland from Walfisch Bay, and **GERMAN EAST AFRICA** from British East Africa to the Portuguese possessions, with the important trading posts of BAGAMOYO, PANGANI and DAR-ES-SALAAM on the coast, TABORA on the route to the interior and UJJI on Lake Tanganyika. European settlers may be able to work on the slopes of Kilimanjaro. The north-eastern part of **New Guinea** with the off-lying *Bismarck Archipelago*, formerly called New Britain, and the *Marshall Islands* in the North Pacific, with a trade in coco-nuts, are the only other possessions.

CHAPTER XV. NORTH-WESTERN EUROPE.

Belgium—Configuration. Resources. Trade. Towns. *Holland*. Configuration. Commerce. Towns. Dutch Colonies. *Denmark*. Danish Colonies. *Sweden and Norway*.

BELGIUM (*Belgique*).

Configuration. The land, commencing at the northern frontier of France and bounded by Germany on the east, slopes from the **mountain** region of the *Ardennes* in the south-east, to the great North European **plain**, which comprises most of Belgium and the whole adjoining country of Holland. The *Scheldt* (*Escaut*) crosses the western part of Belgium from France to its estuary, which opens on the North Sea directly opposite the Thames. The *Meuse* (*Maas*), with its tributary the *Sambre*, crosses Belgium and joins the *Waal*, one of the branches thrown off by the *Rhine* in Holland.

Resources. The Franco-Belgian, or *Valenciennes coal-field*, extends across the south-eastern portion of Belgium in the valley of the Sambre, and 20 million tons of **coal** are raised annually. **Zinc** also is mined, and nearly 1 million tons of **pig-iron** manufactured, chiefly from ore imported from Luxemburg. In the plains industrial plants such as **flax** and **sugar-beet** are largely cultivated, hence Belgium is pre-eminently a manufacturing country. The population is very dense, and the people are thus compelled to be industrious.

Trade. Belgium trades chiefly with France, the United Kingdom, Germany, and Holland; importing **grain** and raw **textile** materials largely from America; and exporting **yarn, cloth, coal, iron,** and metal manufactures. The **coinage** is the same as in France, and French, the official language, is spoken by half the people; the others speak Flemish,

which resembles Dutch, the language of Holland. The railway system is more complete than in any other country. The King of Belgium is the Sovereign of the Congo Free State in Africa, and there is an increasing trade between ANTWERP and the Congo.

Towns. The lowland towns of Belgium are as a rule engaged in commerce and textile manufactures. BRUSSELS (*Bruxelles*, with suburbs, 490) manufactures linen, lace, and carpets; it is the capital, and the central point for railways and canals. Steamers of 500 tons can reach it from the sea. ANTWERP (*Anvers*, 240), on the estuary of the Scheldt, is one of the chief harbours of Europe, doing a great import trade and exporting the manufactures of Belgium and Germany. MECHLIN (*Malines* 50) has lace manufactures. GHENT (*Gand*, 150) is the centre of the **cotton** and **linen** weaving; which are also carried on in COURTRAI and TOURNAI. LIEGE (*Lüttich*, 160) is the chief town of highland Belgium; with its suburb SERAING it forms the centre of the **iron** trade, possessing great machine shops and **firearm** factories. NAMUR, CHARLEROI, and MONS, all manufacturing iron and **glass**, form a chain along the line of the coal-field to the French frontier. VERVIERS (50), with extensive **woollen** factories, is one of the chief cloth markets of Europe. OSTEND is a busy harbour, doing a great passenger trade with English ports.

HOLLAND or THE NETHERLANDS.

This country occupies the North Sea coast between Belgium and Germany, and includes the shallow Zuider Zee, a great part of which is about to be reclaimed as dry land.

A strip along the North Sea coast is below sea-level, the sea being kept out by *dykes*, and the land, divided up into nearly water-tight enclosures called *polders*, is kept dry by continual pumping by steam-engines or windmills. **Wind** is utilised in Holland as a supply of energy more than in any other country. Holland is simply the delta of the *Rhine*, and being perfectly flat it is netted over with **canals**, which in some cases lie below the level of the sea, or run along the top of the dykes beside the railway lines. In winter they are frozen, as the climate is severe, the warm Gulf Stream water not entering the North Sea.

Holland yields no mineral commodities; its agriculture, although extensive, is subordinate in importance to **cattle-rearing**; but on account of its sea-ports, its command of the Rhine trade of Germany, and its vast colonial possessions, this country is almost exclusively **commercial**. The chief **trade of Holland** is with Germany, the United Kingdom, and Belgium; the customs duties charged are low, and are not imposed for protection. Most of the trade is in the import and re-export of colonial produce, **margarine** (artificial butter), **butter**, **cheese** and **meat** being important home exports. Metric weights and measures are in use as in Belgium, but the unit of **coinage** is the Guilder or Florin, worth 1s. 8d.

Towns of Holland. **AMSTERDAM** (440), built on ninety islands on the *Zuider Zee*, is the chief industrial town, and is directly accessible to large ships by a canal straight into the North Sea. **HAARLEM** (50) is famed for the characteristic Dutch industry of tulip-rearing, and has a large trade in **flowers**. **ROTTERDAM** (220), on the Maas, the chief outlet of the Rhine, is the greatest sea-port and commercial centre, and is much occupied in the transit trade of North Germany. **THE HAGUE** (*S'Gravenhage*, 170), the capital of Holland, and **UTRECHT** (90) are business towns. **GRÖNINGEN** (60) in the grazing region of the north has cattle markets. **FLUSHING** (*Vlissingen*), on the Scheldt and **HOOK OF HOLLAND**, near **ROTTERDAM**, are railway ports on the through route between England and Germany.

The **Dutch Colonies** are 64 times larger than the mother country. The **DUTCH EAST INDIES** extend amongst the islands from Sumatra to New Guinea and export **sugar**, **coffee**, **tea**, **rice**, indigo, cinchona, spices, tobacco, and tin, which are shipped almost exclusively to Amsterdam and Rotterdam in the first place. **BATAVIA** (100) in **Java** is the most important sea-port. **DUTCH GUIANA** in South America is also a flourishing tropical colony.

DENMARK consists of the low peninsula of *Jutland* and the islands lying in the Kattegat at the entrance to the Baltic. The **Little Belt**, a channel between the peninsula and *Fünen*, is narrow and difficult to navigate; the **Great**

Belt between *Fünen* and *Seeland* is the only channel deep enough to admit large war vessels; the **Sound**, which is most used by merchant ships, leads between *Seeland* and the mainland of Sweden. It is very rarely blocked by ice.

The **products** are **grain**, and grass on which numbers of **horses** and **cattle** are reared for export. **Butter** is an export of increasing value. Most trade is done with Germany, the United Kingdom, Sweden and Norway. Coal and textiles are the chief imports.

COPENHAGEN (*Kjöbenhavn* = the merchant's harbour, 370) on the Sound is the chief port and capital, carrying on a large trade. **AARHUUS** and **AALBORG**, harbours on the east coast of Jutland, export grain, cattle, and dairy produce. **ODENSE** in *Fünen* has a large general trade, and **SKAGEN** at the Skaw is the seat of the fishing industry.

The **Danish Colonies** comprise the **FAEROE** islands, **ICELAND** and **GREENLAND**, where fishing and eider-down gathering and, in Iceland, the rearing of ponies, are almost the sole resources. There are also three islands in the West Indies, one of which, **ST THOMAS**, was formerly the commercial centre of that archipelago although its trade is now greatly diminished.

SWEDEN AND NORWAY.

Configuration and Climate. The **Scandinavian peninsula** is on the western side a high barren *plateau* penetrated by *fjords*, narrow winding arms of the sea of great depth, and fringed by a multitude of islands, including the important *Lofoten* group. Here the **climate** is usually wet, and milder than any other part of the world in so high a latitude (70° N.), the fjords being always kept free from ice by the Gulf Stream drift. Eastward the plateau sinks in terraces to a plain along the Gulf of Bothnia, widening in the south. Here there is a severe continental climate, the sea-ports being closed by ice all winter. On the southern plain three great lakes, *Vener*, *Vetter* and *Mälars*, connected by canals, give passage to small vessels between the Kattegat and Baltic.

Resources. The resources of the Atlantic coast are **fish**, especially cod, haddock and herring. Great deposits of **iron**, some of it the finest ore in the world, occur all over the peninsula; there are **zinc**, **copper** and **silver** mines in the south-east, but coal is almost entirely absent. Vast **pine-forests** cover the mountain slopes toward the east, and innumerable rapid streams with magnificent **water-falls** supply power for cutting up timber and carry it to the sea-ports. Grain is grown mainly on the southern plain, where the chief crop is **oats**. **Cattle**-breeding is of some importance, and in the north the Laplanders rear reindeer. The **manufactories** include iron-works, wood-working establishments of all kinds, many lucifer-match factories, breweries, and distilleries. The kingdoms of Sweden and Norway, though under the same king, are in every other way distinct and independent.

SWEDEN (*Sverige*), in the south and east of the peninsula, has the greater amount of trade; nearly half the exports consist of **timber** and wooden manufactures. Half of the export trade is with the United Kingdom, but Germany stands first for imports. There is comparatively little trade between Norway and Sweden. **STOCKHOLM** (250), the capital, and chief commercial town, stands at the Baltic entrance of Lake Mälär. **UPSALA**, **DANNEMORA**, with iron-mines, and **GEFLE**, a timber-port on the Gulf of Bothnia, lie to the north; **FALUN**, where copper is mined, to the north-west, and **NORRKÖPING** at the Baltic entrance of the canal to the lakes, with textile factories to the south-west, all within a radius of 120 miles from the capital. **MALMÖ** in the extreme south opposite Copenhagen has the chief trade with Germany and Denmark, while **GOTHENBURG** (*Göteborg*, 110), on the Kattegat entrance to the lakes, is the principal harbour for British trade, and the most active in the kingdom. Its chief import is coal; it has many factories, including great match-works and ship-yards.

NORWAY (*Norge*), on the western side of the peninsula, exports **fish**, **timber**, and **ice**; the main export trade is to the United Kingdom, Sweden, and Germany, while most imports come from Germany and the United Kingdom. **CHRISTIANIA** (150), on a fjord at the angle of the Ska-

gerrack and Kattegat, is the capital, chief harbour, and the one industrial town. STAVANGER, BERGEN (50), the headquarters of the fisheries, and TRONDHJEM, are the other important harbours, each situated on a fjord of the west coast. There is a large merchant navy engaged in foreign trade. HAMMERFEST, the most northerly town in Europe, is a centre for whale fishing.

The metric system is authorised in the three northern kingdoms; but the old weights and measures, which are still employed, are nearly the same as those of the United Kingdom. The **coinage** unit for Denmark, Sweden, and Norway is the *krona* (worth 1s. 1½*d.*), divided into 100 öre.

CHAPTER XVI. EASTERN EUROPE.

Austria-Hungary—Configuration and Climate. Resources. Government. Trade. Towns. *The Russian Empire*—Extent and configuration. Rivers. Mineral Resources. Agriculture. Trade. Towns. *Balkan States*. The Danube. Rumania, Servia, Bulgaria, Greece, Turkey, including Turkish Arabia.

AUSTRIA-HUNGARY (*Oesterreich-Ungarn*).

Configuration and Climate. The west of Austria occupies the Eastern Alps; in the north the table-land of *Bohemia* and *Moravia* borders the mineral regions of Saxony and Silesia in Germany. On the east the *Carpathian* mountains, with the lowland of *Galicia* beyond them, rim round the wide flat *pusztas* or plain of Hungary, which is watered and often flooded by the *Danube* (*Donau*) with its tributaries the *Theiss*, *Drave* and *Save*. These rivers, and the *Elbe*, which flows into Germany, are navigable. The **climate** depends greatly on the configuration of the land; it is most severe on the eastern slope of the Carpathians, and most favourable on the shore of the Adriatic.

Resources. There are **gold** and **silver** mines in Transylvania and Hungary, **iron-ore** of remarkable purity is worked in Styria, **quicksilver** at IDRIA near the Adriatic; lead, zinc, and copper also occur. In the northern provinces about 9 million tons of **coal** are raised annually, and at various parts of the empire 15 million tons of **lignite** are produced. **Petroleum** and **rock-salt** abound in Galicia. The extensive **forests** yield large supplies of timber, and agriculture occupies two-thirds of the population. **Wheat** is most largely raised and flour is an important export, but **oats**, **barley**, **maize**, **rye**, and **potatoes** are also cultivated largely. **Vine-culture** and wine-making, **hop-growing** and **brewing** are

very important industries. **Beets** for sugar, and **tobacco** occupy considerable areas. The Hungarian *puszta*s, which resemble the Russian steppes, pasture herds of **horses, cattle, and sheep**, and when cultivated yield heavy wheat crops.

Government. The separate monarchies of Austria and Hungary are one for external politics and commerce, and under one monarch, called emperor in Austria, and king in Hungary. The people belong to many races, speaking a number of languages; German is used officially in Austria, Hungarian in Hungary. There are more **gipsies** and **Jews** in the eastern part of the empire than in any other country. The standard **coinage** of the silver florin (worth 1s. 8d.), divided into 100 krenzers, was superseded in 1892 by the krone, based on a gold standard and worth 10d., divided into 100 heller. The metric system is legal, but the old weights and measures are often employed.

Trade. There is a **protective tariff**, and the import by merchants of articles of Government monopoly, such as tobacco, salt, and gunpowder, is prohibited. The leading *exports* are grain, sugar, timber, minerals, and manufactures, especially glass-ware from Bohemia. More than half the trade is done by rail with Germany, and much by the Danube, which is navigable right through the monarchy.

Railway-rates in Austria-Hungary both for goods and passengers are adjusted by what is termed the *Zone-system*, the cost of transport to all places within certain distances being the same, and a definite increase being made for each successive zone of distance.

Towns. VIENNA (*Wien*, with suburbs 1360), on the Danube, the capital of the empire, has a famous Exchange, great cotton, silk and woollen factories, breweries, and wine-trade from the surrounding vineyards. It is particularly famous for artistic work in wood, leather and mother-of-pearl, for drugs, perfumery and chocolate. PRAGUE (310), on the Elbe, the centre of Bohemian industry, is in railway connection with the great brewing town PILSEN and numerous smaller towns which produce **coal** and **textiles**, especially woollen cloth, **hardware**, and **glass** goods: BRÜNN (90) is the most important of these. CRACOW (90) and LEMBERG (130), on the borders of Russia, centralise the trade of Galicia in **wool, grain, salt** and **petroleum**. In the Alpine region of the south-west GRAZ (110) is the centre of the Styrian **iron** trade. TRIEST (160), at the head of the Adriatic, is the greatest harbour. It is the

head-quarters of the *Austrian Lloyd's* steam-ship company, which trades mainly with Mediterranean ports and the East. FIUME, the harbour of Hungary further south, also does a large export trade, but it imports very little. The double town of BUDAPEST (500), on the Danube, is the capital of Hungary, doing a large grain, cattle and wine trade, and containing many flour-mills grinding the wheat of the plains. Carriage-building, jute-spinning and distilling are also important industries. SZEGEDIN (90), on the Theiss, is also an industrial town; **horse** and **cattle** trading occupy most attention in MARIA-THERESIOPOL (70) and DEBRECZIN. KRONSTADT, in the extreme south-east, is the chief mining centre in the still undeveloped region of *Transylvania*.

THE RUSSIAN EMPIRE.

Extent and Configuration. The Russian Empire occupies the whole of eastern Europe from north to south, and the whole of northern Asia from west to east, over a continuous extent of $8\frac{1}{2}$ million square miles of continent. In the north it forms one vast **plain**, swelling up to the Ural mountains in longitude 60° E. where Europe meets Asia. All European Russia is flat; but in Asiatic Russia the southern part of the plain rises in the *Altai* and other **mountains** to form the buttress of the lofty Asiatic plateau, whence great rivers flow northward.

Rivers. There are about 33,000 miles of navigable **rivers** in European Russia, and about 400 miles of **canals**, which carry an immense traffic during the open season. The system of the *Neva* and *Volga* carries more than three-quarters of the total river trade. It includes Lakes *Onega* and *Ladoga* (the southern shores of which are skirted by canals to enable barges to avoid the rough water of the lakes) with access to the Baltic, the river *Dwina* entering the White Sea, and the *Volga*, with long navigable tributaries from east and west, flowing into the Caspian, and at TSARITSIN coming within 50 miles of the *Don*, to which barges are transferred by railway and floated down to the Black Sea. Another system links the Baltic through the *Vistula* and *Dnieper* with the Black Sea and Mediterranean. In

Asiatic Russia there is a vast system of north-flowing rivers, including the Ob, Yenesei and Lena, fed by east or west flowing tributaries which carry some traffic in summer and autumn but are closed by ice for half the year. There are only 20,000 miles of railway, but 90,000 miles of telegraph line, including one across the whole breadth of Asia.

The **climate** is purely continental; all the rivers and nearly all the sea-ports are frozen in winter, most of them for from 4 to 6 months; and in summer the heat is intense, while the rainfall is slight over almost the entire empire.

Mineral Resources. The chief coal-fields are (1) in the centre around TULA to the south of MOSCOW, where the production is small, (2) on the west in *Poland*, an extension of the Silesian coal-field, producing about 3 million tons a year, (3) in the south between the rivers *Donetz* and *Don* near the Sea of Azoff, where the best coal is obtained and 3½ million tons are annually raised, the whole production of the empire being only 7 million. The Ural mountains contain some coal, and mines where **iron, gold, zinc, silver and platinum** are produced in great abundance. The province of *Ekaterinoslav* near the Donetz coal-field yields one-quarter of the whole Russian output of iron. Copper, lead, gold and graphite are obtained in various parts of Asiatic Russia, especially in the Altai mountains. There are **rock-salt** mines in several places, and salt works amongst the saline lakes of the Steppes. The western shore of the Caspian is pierced by very productive **petroleum** wells.

Agriculture. In the far north of European Russia the frozen plains or *tundras* bear a scant covering of moss during the short summer, these are succeeded by a wide belt of **pine forests**, followed farther south by forests of **beech** and **oak**, forming the greatest wood-covered area in Europe. The woods are under Government control, and in those round the upper reaches of the great rivers all cutting is forbidden. In clearings of the forests **rye, oats, flax and hemp** are grown. South of the woodlands is the most fertile region of Russia, a treeless plain stretching from the Carpathians to the Urals south of 55°, and called the land of the *Black Earth*, growing **wheat, rye**, and in the south-west **maize**. South of all, the *Steppes* extend to the Black Sea and the Caspian. The Steppes are snow-covered in winter, and barren plains of dust in summer, but in spring and autumn they are clothed with grass on which **horses, cattle and sheep** are pastured. The woods are crowded with **fur-bearing** animals, such as the squirrel, and the great rivers swarm with fish.

The **trade** of Russia is mainly with Germany and the United Kingdom, and the *exports*, which exceed the imports in value, are mainly grain (averaging 55 per cent. of the whole), chiefly **wheat** from the Black Sea, **oats** and **rye** from the Baltic ports, **timber, flax, hemp**, and other industrial plants, with **cattle** and animal products. The chief

imports are raw materials for the extending manufactures, **coals**, **tea**, and manufactured articles. The commercial policy is that of **protection**, the average duties levied on imports being 35 per cent. of the value of the goods. Coal pays 8s. per ton at Black Sea ports where it could compete with Russian coal, but only 2s. at Baltic ports where native coal is dearer owing to cost of transport. Siberian rivers on the Arctic Sea can be reached by steamers in summer; ice makes the navigation dangerous, but goods are admitted there duty-free to encourage trade. The **government** is an absolute monarchy; the people belong to many races, speaking many languages, and although docile are not as a rule enterprising. The unit of measurement is the British foot, that of weight the *pood* (36 lbs. avoirdupois) divided into 40 "pounds." The standard **coin** is the silver *ruble* (worth nominally 3s. 2d.), and in **FINLAND** (which is governed by an elected parliament under the Tsar as Grand Duke) the *marc* or franc; but a depreciated paper currency is in almost universal use for all transactions of 1 ruble and upwards, and the value of the paper ruble is only 2s. 3d.

Towns. The principal sea-port on the Baltic is ST PETERSBURG (1000), the capital, reached by a ship-canal from the great naval-station of CRONSTADT on an island in the Gulf of Finland, which was its port until 1885. REVAL (50) with imports of cotton, HELSINGFORS (60) in Finland, and RIGA (180) are also harbours on the Baltic. Their staple exports are oats, rye, wood, hemp, flax, and tallow. REVAL and RIGA often remain free from ice all winter and are never blocked so long as the Neva, so that they carry on much of the trade of ST PETERSBURG in winter. ARCHANGEL, on the White Sea, exports flax, especially to the United States, timber, tar, and tallow. The chief Black Sea harbours are TAGANROG (50) at the mouth of the Don on the Sea of Azoff, KHERSON (60) on the Dnieper, NICOLAEFF (70) and ODESSA (330). The last is the busiest port, receiving grain for export from KISHINEFF (120) and other inland centres and doing a great trade in tea and other Asiatic products; it is rarely blocked by ice. SEBASTOPOL (now a naval harbour closed to trade), NOVOROSSEISK, and BATUM are never frozen. The staple export from all except the eastern sea-ports is the **wheat** of the *Black Earth* region. MOSCOW (820)

is the first manufacturing town for textiles, metal-work and paper, and is the chief centre of internal trade. TULA (60) and KALUGA have coal-mines and extensive iron-works. NIZHNI NOVGOROD (70) on the Volga is visited by hundreds of thousands of merchants with goods of all kinds brought by rail, river, and caravan from Europe and Asia at the great yearly fair in July. Further down the Volga, the industrial town of KAZAN (140), ORENBURG, a caravan terminus, and SARATOFF (120), with tobacco and salt-works, have a large shipping trade. From PERM on the *Kama*, a tributary of the Volga, a railway crosses the Urals to EKATERINBURG, the mining centre of that region. ASTRAKHAN (100) on the Caspian Sea has **sturgeon** fisheries and trade with BAKU and Persia. KHARKOFF (190), on the northern border of the Steppes, with large **horse** trade, and KIEFF (180), on the Dnieper in the north of the Black Earth region, with beet-sugar works, hold important **fairs**. In Poland WARSAW (490) on the Vistula is a manufacturing centre and LODZ (140) on the Silesian coal-field the chief **cotton**-spinning town. VILNA (100) is an industrial town on the railway between WARSAW and ST PETERSBURG. TIFLIS (140), south of the Caucasus Mountains, and midway on the railway between the oil town of BAKU (100) on the Caspian and its port BATUM on the Black Sea, has **silk** manufactures.

TASHKENT (120) in Turkestan is the chief town of Central Asia; and the Trans-Caspian railway from USAN-ADA reaches to SAMARKAND in its vicinity. In this region the growing of cotton by means of artificial irrigation is carried on with success. A great railway is being built across southern Siberia from MIASK in the Urals to IRKUTSK on Lake Baikal and along the Amur valley, turning south to VLADIVOSTOK, the chief naval station on the Pacific. This line will be 4,900 miles long, and absorb the trade in tea and skins now carried on by camel caravans from KIAKHITA on the Chinese frontier. It will also help to develop the country by providing an outlet for the produce of the mines

and fields. At present camel transport on this route costs £120 per ton from K^IAKHTA to ORENBURG.

BALKAN STATES.

The **Balkan Peninsula** is rugged and mountainous, and terminates in an archipelago which separates the Ægean Sea from the Mediterranean. The river valleys although fertile are narrow, with the exception of that of the Danube, which forms a wide plain bounded by the Carpathians to the north, and the Balkans to the south. North of the Balkans the **climate** is of the severe continental type, to the south it is warmer, and favourable for the growth of fruit and roses. **Agriculture** on the plain and in the valleys, and rearing live-stock, are the chief industries; the mineral resources being scarcely touched.

The **Danube** is an international highway from its mouth in the Black Sea for more than 500 miles to the rapids of the Iron Gate. It is under the control of a Commission at Giurgevo, on which all the great maritime powers of Europe are represented, and is kept open for ocean steamers by engineering works at the *Sulina mouth*, the other two outlets on its wide delta not being accessible to large ships. The river is, as a rule, closed to sea-trade by **ice** during January and February.

RUMANIA, between the Danube and the Carpathians, belongs to the Black Earth region and is mainly agricultural, producing enormous quantities of **maize** for export, along with **wheat** and barley. **Petroleum** and **rock-salt** are also worked. Most of the imports come down the Danube valley from Austria-Hungary and Germany; nearly half of the exports go down the Danube to the United Kingdom. BUCHAREST (200) is the chief trade centre; and JASSY (70), on the Russian frontier, with a large Jewish population, comes next. GALATZ (60), the chief Danube harbour for sea-going ships, and IBRAIL (*Braila*), a few miles higher, export grain chiefly in British steamers.

SERVIA, separated by the Danube from Hungary, grows **maize** and **wheat** in the valleys. The chief export is of **swine**, fed in the beech and oak forests which cover most of the country. The trade is almost exclusively with

Austria-Hungary and is carried on mainly in the capital, **BELGRADE** (50), at the junction of the Save and Danube. British imports brought by rail from Salonika are gaining attention.

BULGARIA including **Eastern Rumelia** lies south of Rumania. Iron and coal occur near **WIDDIN** on the Danube and **VARNA**, a port on the Black Sea. The growth and export of **wheat** and other grain, **sheep-rearing** and **wool trade** are the chief industries. A railway from Austria, over which the Orient express runs through from Paris to Constantinople, by the valley of the Morava in Servia, passes **SOFIA**, the capital, and descends along the Maritza valley by **PHILIPPOLIS** (30), a commercial town manufacturing **silk**, cotton, tobacco and **otto of roses**. **RUST-CHUK** is a Danube port. The chief export trade is to Turkey, most of the imports come from Austria-Hungary.

GREECE comprises the southern islands and peninsulas. Minerals, especially iron, lead, silver and zinc, are worked to some extent; but the country is mainly **agricultural**, nearly half of the value of the exports is made up by **currants**, the dried fruit of a small vine. **Wheat** and **maize** are grown in the plain of Thessaly, where **LARISSA** is an important town. The warm climate allows grapes, olives, and many southern fruits, as well as cotton and tobacco, to mature. Large flocks of **sheep** and half-wild **goats** are kept, but there are few cattle or pigs. The Greeks are a seafaring and commercial people, and carry on most of the sea trade in the eastern Mediterranean, the Greek race predominating in the Turkish islands of the archipelago and bulking largely amongst the people of Asia Minor. **ATHENS** (100), with its magnificent harbour at **PIRÆUS**, is the only large town and is joined to **PATRAS**, on the Gulf of Corinth, by a railway running across the Isthmus, which is now pierced by a **ship-canal**. Navigation round the coasts is dangerous and the lighthouse system is defective. **HERMOUPOLIS** on the Isle of *Syra* is a coaling

station for vessels entering the Black Sea. The coinage throughout the Balkan States is that of France, the franc being called a *drachma* in Greece—where a depreciated paper currency exists—a *dinar* in Servia, and a *lei* in Rumania and Bulgaria.

TURKEY, or the *Ottoman Empire*, to which the other Balkan States formerly belonged, is an absolute monarchy, but foreigners resident in the country are under their own laws, administered by their consul. The empire extends into Asia, and exerts control over **TRIPOLI**, and nominally over Egypt in Africa. The **resources** are little developed, and industries have greatly declined since the middle ages. Raw **silk**, **opium**, **coffee**, **wool**, **mohair** from the goats of Angora, **valonia**, figs and other dried fruits, and **cotton** are the chief exports. Most **trade** is done with the United Kingdom, and next to that with Austria for imports and with France for exports. **CONSTANTINOPLE** (880) on the Golden Horn, with **SCUTARI** on the Asiatic side, commands the *Bosphorus*, the narrow outlet of the Black Sea to the small Sea of Marmora. It is the centre of the empire and a commercial city with a large foreign population in the suburbs of *Pera* and *Galata*. **GALLIPOLI** on the narrow strait of the *Dardanelles*, which gives access to the Sea of Marmora from the *Ægean*, is the chief naval station. **SALONIKA** (60) on the *Ægean* is an outlet for the silk-growing villages of the west and is in railway connection with western Europe. **ADRIANOPLE** (100) on the navigable Maritza contains carpet factories and distilleries of otto of roses.

Asiatic Turkey. The chief harbour of Asia-Minor is **SMYRNA** (200), accessible by the largest steamers, and connected by rail with the interior. (It has a large export trade in **wool**, **valonia**, **opium**, **fruit**, including raisins and dates, **sponges** and **cotton**. **BRUSSA** in the middle of the best tobacco, cotton, and silk-growing region, and **ANGORA** in the highland home of the mohair goat, are

commercial centres, the latter connected by rail with Scutari. ERZERUM (60) on the plateau of *Armenia*, ALEPPO (120) and DAMASCUS (200) in *Syria*, are trading towns on the caravan routes from the East. BEIRUT (80) on the Mediterranean has textile manufactures, and steamer trade: a railway is being made from it to DAMASCUS. A line has been opened from JAFFA to JERUSALEM. BAGDAD (180) on the Tigris conducts caravan trade with Persia and the Black Sea, and steamers run on the Tigris and Euphrates through the rich Mesopotamian plain to BASRA (*Bussorah*) on the Shat-el-Arab, near the head of the Persian Gulf. MECCA, the holy city of the Mohammedans, in Turkish Arabia, requires a constant service of **pilgrim** steamers from all Mohammedan countries to its port JEDDA on the Red Sea. HODEIDA, farther south on the Red Sea, exports **coffee**, grown on the slopes of *Yemen* facing the sea, and dates.

CHAPTER XVII. SOUTHERN EUROPE.

Switzerland. Italy—Resources, Trade, Towns of Italy. Eritrea.
The Iberian peninsula—Spain. Spanish Colonies. Portugal.
Portuguese Colonies in Africa.

SWITZERLAND (*Schweiz, Suisse*), shut in among the Alps between Italy, Austria, Germany, and France, is an agricultural and industrial republic. Most of the inhabitants speak German, the rest French or Italian. The **population** is dense on the comparatively level tableland near the lakes of Geneva and Constance, where there are industrial towns (using **water-power** as a rule); but is very thin in the Alpine valleys, where **cattle-rearing** and the making of **cheese** and condensed **milk** are the chief occupations. The fine **scenery** attracts thousands of **tourists**, who spend 5 million pounds a year in the country and give employment to a great number of hotel-servants and guides. Silk and cotton textiles, clocks and watches, are the chief manufactures and *exports*. Grain from Austria-Hungary and raw materials are the leading *imports*.

Towns of Switzerland. ZÜRICH (100), an important railway centre, is the largest town with most of the **textile** industry and transit trade. BASEL (*Bâle*, 70), on the Rhine, weaving **silk**, especially ribbons, WINTERTHUR with engineering works, ST GALLEN with cotton-spinning and embroidery factories, and SCHAFFHAUSEN, the head of river navigation on the Rhine, stand on the plateau in the north-east. GENEVA (*Genf*, 70), on the French frontier, is the centre of the **watch** and **clock-making** which is carried

on in the surrounding villages. LAUSANNE, NEUCHATEL (*Neuenburg*) and LA CHAUX DE FONDS are important trade towns in the west with railway transit to France.

ITALY (*Italia*).

The **Italian peninsula** is cut off from central Europe on the north by the vast barrier of the **Alps**, at the base of which lies the **plain** of Lombardy, shut in on the south by the **Apennine** range running down the centre of the peninsula. The **climate** of all Mediterranean countries is warm and dry, but subject to occasional bitterly cold blasts from the snow-covered Alps (the *mistral*), and hot dry winds from the African deserts (the *sirocco*). The **railway** system leading to Italy is unique on account of the number of long tunnels; the most important lines are the *Mont Cenis* from France, the *St Gothard* from Switzerland and Germany, and the *Brenner*, which crosses the Alps without a tunnel, from Austria.

Resources. The chief minerals of Italy are the **sulphur** of Sicily (half the total mineral wealth of the country) shipped at CATANIA (120) near Mount Etna, and the **marble** of CARRARA in the north-west of the peninsula. **Zinc** (mined near CAGLIARI, Sardinia) comes next in importance, then **lead** and **copper**. **Iron**, though as yet little worked, occurs in the extreme north and in the Isle of Elba. The plain of Lombardy, watered from the rivers Po and Adige by a network of navigable canals, is densely peopled and fertile, raising **wheat** as a winter, and **maize** as a summer crop on the higher ground, with **rice** in the marshes. The **vine** grows in all parts of the peninsula and much ground is under **olives**, **hemp**, **flax**, and southern **fruits**, such as the orange, fig, and almond. Chestnuts form a large part of the food of the people in the south. Mulberry trees are grown for feeding silkworms. The alpine slopes pasture **cattle**, and supply dairy produce, particularly **cheese**, for export. There are sardine, oyster, and coral **fisheries** on the coast.

Trade. **Silk**, **wine** and olive **oil** are the characteristic manufactures. The preparation of **macaroni** from wheat-flour, and straw-plaiting, also employ many hands. Silk amounts in value to one-third of the total **exports**, wine, olive oil, fruit, sulphur and fibres come next. The chief **imports** are grain, raw material for textiles, and coal, as Italy has only a few lignite beds. Most trade, especially for exports, is done with France and with the United Kingdom in almost equal proportions, then with Germany and Austria-Hungary. The trade policy is **protective**, very heavy duties being charged on imports. The coinage is like that of France, but the *lira* although nominally equal to one franc is depreciated 10 per cent. in value and paper money even for 1 *lira* is alone in use.

Towns of Italy. MILAN (430), the junction for the St Gothard railway, is second only to Lyons in silk-weaving, and TURIN (330), junction for the Mont Cenis tunnel, has similar trade. PIACENZA, PARMA (50) and MODENA (60), both with *terra-cotta* works, and BOLOGNA (140), are centres for collecting and spinning silk on the railway along the south of the plain of Lombardy which leads to ANCONA (50), and BRINDISI, where the British mails for India and Australia coming *viâ* the Mont Cenis Tunnel are shipped. Another line from MILAN, along the northern border of the plain, passes near BERGAMO (a famous raw-silk market, to which the peasants of the surrounding villages bring the cocoons they rear at home), through BRESCIA (70), with iron and steel works, VERONA (70), the junction for the Brenner line, PADUA (80) with silk-mills, and crosses by a bridge 1 mile long to VENICE (150), which is built on 120 islets in the Adriatic, and was once the chief commercial city in the world. GENOA (210) in the north-west is now the first Italian harbour, especially for foreign trade; its growth has been very rapid since the opening of the alpine tunnels, which enabled it to compete favourably with Marseilles. LEGHORN (*Livorno*, 100), farther south, ships the best olive oil, and is the port of FLORENCE (*Firenze*, 200), the centre of art manufactures. ROME (440), the capital, has little commercial importance, but NAPLES (530) comes second to GENOA. PALERMO (270), with silk and cotton mills, MESSINA (140) and GIRGENTI are the chief ports of *Sicily*, exporting wine, oranges and other fruit.

The Italian colony of ERITREA on the Red Sea, has the hot sea-port of MASSAWA as its one trade-centre, and there is an uncertain "protectorate" over the neighbouring Arab tribes, which for a time extended to Abyssinia.

SPAIN and PORTUGAL.

The Iberian peninsula, shut off from France by the *Pyrenees*, is well situated for external trade, steep coasts with natural harbours facing

the Mediterranean and Atlantic. It is a high **table-land**, ridged by mountain ranges, with five chief **rivers**, *Ebro*, *Guadalquivir*, *Guadiana*, *Tagus* and *Douro*. These flow as a rule through narrow valleys, which widen into extensive plains in the south-west. There are great deposits of fine **iron** ore in the north, **lead**, **copper**, **mercury** and **zinc** in the south, and **coal**, not yet much worked, in several places.

SPAIN (*España*) occupies most of the peninsula. Although mining and industries are rapidly developing, **agriculture** is the mainstay of the people. The most fertile regions are the southern *huertas* or gardens (watered by canals made by the Moors centuries since) and the plains of *Andalusia*, where cotton, rice, dates and sugarcane grow. **Wheat** and **maize** are the chief grain-crops, sufficing for home consumption; the **vine** is very extensively cultivated, and the **cork-oak**, **olive** and all southern **fruits** abound. **Silk-worm** culture and the breeding of fine-wooled **merino sheep** and horses are important.

Trade. **Wine** accounts for half the value of the *exports*, the rest being mainly metals, ores, fruit, live-stock and cork; the *imports* are chiefly raw cotton, colonial produce and manufactured articles. Most of the trade is with France and the United Kingdom, North and South America coming next. The **coinage** is like the French, the franc being called a *peseta*.

Towns of Spain. **MADRID** (470), the capital, is the railway centre whence lines radiate through the valleys to the sea-ports. **BARCELONA** (270), in the north-east, is the first industrial town and chief harbour, receiving one-third of the imports of the country, and connected by rail with **VALENCIA** (170), another port with silk-mills. **ALICANTE** has export trade and factories. **CARTAGENA** (80), in the south-east, exports lead from the mines of **MURCIA** (100), a town in the midst of a silk-growing district. **ALMERIA** ships lead and zinc ores, wine, raisins, and esparto; and **MALAGA** (130), which is second to **BARCELONA**, has similar trade on a larger scale. It contains cotton-mills and sugar-works, and is the port of the old industrial and commercial city of **GRENADA** (70). **SEVILLE** (140), on the Guadalquivir, which is navigable to the town, has

various industries, and exports **mercury** from **ALMADEN** and lead from **LINARES**, brought down by rail through **CORDOVA** (50), an important trade centre. **JERES** (60), near the mouth of the river, ships sherry at **CADIZ** (60), a fine harbour, but an unhealthy town, the trade of which is declining. In the south-west the copper works of the *Rio Tinto* and *Tharsis* companies have brought prosperity to the small port of **HUELVA**, whence ore and metal are shipped to Britain and America. **CORUÑA** is the first trade town of the north-west; **SANTANDER** and **BILBAO** (50) on the Bay of Biscay ship iron ore.

The chief **Spanish Colonies** are **CUBA** in the West Indies, exporting large quantities of **sugar** and **tobacco** through its capital, **HAVANA** (200), and the **PHILIPPINES** in the East Indies, with the capital **MANILA** (270), exporting **sugar**, **manila-hemp**, and **tobacco**.

The **Sulu**, **Caroline** and **Marianne** Islands in the Pacific, the **Canary Islands** off the coast of Africa, and several small areas on that continent also belong to Spain.

PORTUGAL occupies a strip of the Iberian peninsula in the south-west. **Wine**, **cork**, fish and copper are almost the only exports, and most of the trade is done with the United Kingdom, France and Germany coming far behind. Its resources are even less developed than those of Spain. Agriculture and fisheries are the staple industries. The *milreis*, valued at 4s. 5d., and divided into 1000 reis, is the standard coin. **LISBON** (*Lisboa*, 250), on the estuary of the Tagus, is the capital and chief port for foreign trade. **OPORTO** (100), at the mouth of the Douro, farther north, weaves some textiles, but is chiefly engaged in the manufacture and export of **port-wine**. No other town has a population greater than 20,000. **SETUBAL** (*St Ubes*), near **LISBON**, has a famous deep-sea shark fishery and salt-works.

The colonies of **Portugal** include the **AZORES**, **MADEIRA**, with its capital **FUNCHAL**, exporting wine,

and **CAPE VERDE ISLANDS**, in which **ST VINCENT** is a coaling station. A large part of Africa south of the equator has been in the possession of Portugal for 400 years. **Portuguese West Africa**, including Angola, Benguella, and Mossamedes, contains many thriving plantations, and a railway has been constructed inland for 150 miles from **LOANDA**. **Portuguese East Africa**, including Mozambique, is in a less satisfactory state. **KILIMANE**, at one mouth of the Zambesi, was important as a landing-place for British Central Africa until the Chinde mouth was found to be navigable. **BEIRA**, on the Pungwe, has a railway leading to Mashonaland, and **LORENZO MARQUEZ**, on Delagoa Bay, one of the best harbours in East Africa, is the terminus of a railway to the Transvaal Republic.

CHAPTER XVIII. THE COUNTRIES OF ASIA.

Arabia. Persia. Afghanistan. Siam. China—Extent, People, Resources, Towns. *Japan*—Configuration and climate. Resources. People and trade. Towns. *Korea*.

THOSE countries under the control of European powers have been already referred to, viz.—Siberia and Russian Central Asia under Russia, Asiatic Turkey under Turkey, and French Indo-China under France. The Indian Empire and British Colonies in Asia are separately treated.

ARABIA, occupying most of the plateau between the Red Sea and the Persian Gulf, is practically independent of the Turkish Empire. It is a hot region of *sand deserts* dotted with *oases* on which **dates**, and the acacia tree yielding **gum arabic**, are cultivated. The wandering Arabs rear **camels**, sheep, and the finest breed of **horses** in existence. In **Oman**, the port of **MUSKAT** on the Gulf of Oman, is the only important town, but several villages of pearl-fishers and traders border the Persian Gulf.

PERSIA, the largest and most western country of the *Iran* plateau, has the Caspian Sea on the north and the Persian Gulf on the south. It is governed by an absolute monarch, the Shah, and is beginning to adopt European methods of commerce. There is a mail service from Europe through Tiflis in Russia, and from India by sea. The country is traversed by several telegraph lines, but there are scarcely any roads and only a few miles of railway. The climate is dry, and much ingenuity is shown in the con-

struction of irrigation works for agriculture. The *exports* are dried **fruits, opium, cotton**, wool, silk, pearls, turquoises and carpets; the *imports* cotton and other cloths, glass goods and articles of food. Most of the external trade passes through BUSHIRE, on the Persian Gulf, whence a difficult track leads to SHIRAZ, a town of rose-gardens, where otto of roses is made. LINGA and BENDER ABBAS are also important ports, there are no *harbours*, on the Gulf. TABRIZ (180), in the north, is the chief commercial town and centre of caravan traffic from Trebizond on the Black Sea. TEHERAN (210), the capital, is a centre for caravans from all the frontier towns; and so is ISPAHAN (60), around which cotton and silk are produced. Several small towns on the Caspian trade with Russian ports. The commercial importance of Persia has been recently increased by the opening of the Karun river, which enters the Shat-el-Arab, to foreign trade, and the foundation of a State Bank. There is keen competition between British and Russian merchants; the trade of the former is greatest in the south, of the latter in the north.

AFGHANISTAN, with its chief towns of HERAT near the Persian, KABUL near the Indian frontier, and KANDAHAR in the south, is important mainly as a "buffer-state" between the Indian and Russian empires, with both of which it does a small trade. Access to KABUL is had by a good road through the Khaibar Pass from Peshawar, and to KANDAHAR by road from New Chaman, the present terminus of the Sind-Pishin railway. **Drugs**, especially castor-oil and asafoetida, and fruits are the chief commercial products.

SIAM, between the Indian province of Burma and French Cochin China, with telegraph lines to both, produces **teak-wood** from its inland forests, **tin** from the mines in the Malay peninsula, **rice** on the flat marshy coast lands, and plantation products. Rubies and other gems are found in considerable quantities. The country is politically influenced by France but commercially by China, which

absorbs most of its external trade. Railways are being built to open up the interior of the country. Commercial activity is centered in the great city of BANGKOK (200), literally on the river Menam, whole streets being composed of floating houses, and canals taking the place of roads on land. Rice forms nearly two-thirds of the *exports*, teak, pepper and spices, cattle and edible birds'-nests coming next in value.

CHINA.

Extent. The Chinese Empire occupies Eastern Asia ; the densely peopled district of *China proper* bordering the sea. The two chief rivers, the Yang-tse-kiang and Hoangho or Yellow River, flow from the western mountains across great, flat and very fertile plains, which they frequently inundate, the course of the Yellow River often changing. *Tibet*, bordering India beyond the Himalayas, *Eastern Turkestan*, *Jungaria* to the north-west, the enormous territory of *Mongolia* bounded by Siberia in the north, and the smaller province of *Manchuria* in the north-east, all occupying the vast plateau and terraces of Central Asia, are provinces differing somewhat in their relation to the empire, but all practically closed to commercial intercourse with the outer world by their position and policy.

The **people** of China proper are intensely laborious and industrious ; they have been in a sense civilised for thousands of years, and are slow to adopt Western methods. On account of the density of population many are always eager to emigrate ; they ask very low wages, spend little money, and invariably return to China with their savings, in case of death abroad their bodies being sent home. They are greatly disliked in newly-settled countries, and in many their landing is absolutely prohibited. The prevalent vice of *Opium-smoking* keeps up a demand for Indian opium which was forced on the Chinese by the British Government after several wars.

The **resources** of the country are great, but only the **agriculture** has been fully developed. In the north the Yellow River flows through vast deposits of a rich yellow earth, on which cotton, wheat, millet and leguminous plants are cultivated. In the south, especially about the

Canton river, rice, **tea** and sugar grow, and the **silkworm** is reared on a very large scale. **Poppies** are extensively cultivated in western China, which on account of difficulties of transport takes a small share in foreign trade. The **coal**-fields of China are more extensive than those of any other country, and have been worked on a small scale for many centuries. The principal mines are those of KAI-P'ING in the north. Those of KE-LUNG in the island of *Formosa* and of HANKOW (800), the greatest tea-shipping port on the Yang-tse-kiang, are also important. The **canal** and **road** systems of China are extensive and complete, but, as a rule, badly maintained. The **ivers** are the main highways of commerce; railways are just beginning to be sanctioned, and one is in operation from KAI-P'ING to TIENTSIN and beyond that town for some distance northward. Many towns are connected by **telegraph** lines. Chinese **industries** are of merely national importance; the chief textile woven is **silk**; there are also manufactures of cotton, although immense quantities of cotton-cloth are imported. The making of **paper** and of fine **porcelain** is important in a less degree, and all processes are carried on in the same way as in remote antiquity. British vessels are admitted into twenty-two ports, by special treaties, and most of the external trade by far is with the United Kingdom and India, although Russia takes most of the tea. The chief **exports** are **silk** and **tea**, and the principal **imports** **cotton** goods and **opium**. The unit of **coinage** for international purposes is the *haikwan tael*, valued at 4s. 4d. A peculiar dialect called "pijin English" or "business English" is used in commercial transactions at the treaty ports.

Towns. PEKIN (1500), the capital on the Peiho, is a starting place for caravans to central Asia and Russia; its sea-port is TIENTSIN (900), a treaty port near the mouth of the river on the Gulf of Pe-che-li. SHANGHAI (400), near the mouth of the Yang-tse-kiang, is the most important harbour and centralises the foreign trade, especially that in opium and silk. It contains one-half of the foreigners living in China. There are several treaty ports on the Yang-tse-kiang, I-CHANG, 1000 miles from the sea, being the most remote to which steamers are allowed to ascend, though the river is navigable much higher. Along the coast south of the Yang-tse-kiang the chief treaty-ports are NING-po, FOOCHOW (650), one of the chief tea exporting towns, and AMOY. CANTON (1800), a manufacturing city and the oldest treaty port, with great exports of silk, stands on the Canton river, on which a large proportion of the

inhabitants live in house-boats. The river contains immense quantities of the **pearl-mussel**. The British island colony of Hong-kong is situated at the mouth of the estuary, and opposite it on the south side is the small Portuguese colony of **Macao**.

JAPAN.

Configuration and Climate. The ancient empire of Japan occupies a chain of mountainous islands separated by the Sea of Japan from Korea and Asiatic Russia. The latitude corresponds to southern Europe, but the climate is on the whole colder and more severe, with hot summers in the south and cold winters in the north. The deeply indented shores have many good harbours, and the position near a populous continent is remarkably advantageous for commercial intercourse. Navigation in the Sea of Japan and along the east coast of Asia is made dangerous by the occurrence of sudden cyclonic storms known as *typhoons*; warnings are issued at most of the ports when the approach of such storms is expected.

Resources. Copper, silver, iron, coal, and sulphur, all of which are worked and exported, are the chief mineral resources. Although the low ground and valleys are of limited extent the soil when well manured produces **rice**, barley, rye, wheat, **tea**, cotton and tobacco abundantly. There are great **forests** and the **lacquer** tree, which yields a peculiarly fine varnish for ornamental woodwork, is a characteristic product of Japan. The **silkworm** is largely cultivated; and there are extensive **fisheries** on the coast.

People and Trade. Japan, a limited monarchy since 1889, although in some ways similar in people to China, differs from that country in the completeness with which it has accepted the methods of Western civilization. While the chief manufacturing industries are those producing silk-goods, lacquer and art-work, porcelain and metals, new factories with European processes have been established, and, like the Government colleges, are to some extent managed by Europeans or Americans until natives are educated sufficiently to take full charge. **Railway** and **telegraph** lines connect the principal places in the larger islands. External commerce is encouraged, and ten ports are open for foreign trading vessels. The chief *exports* are, raw **silk** (which amounts to one-

half), **tea**, sent mainly to America, **rice**, **coal**, copper and fish; and the principal *imports* are cotton and woollen goods, sugar, metals and petroleum. The chief trade is with the United States and Canada for exports; the United Kingdom for imports; then France and China. At the open ports English is the commercial language. The unit of **coinage** for foreign trade is the silver *yen* or dollar, worth about 3s. 4d., the paper currency used for internal trade, although based on a gold standard, has practically the same value as silver.

Towns. Yedo Bay on the east coast of *Hondo*, the central and largest island, contains YOKOHAMA (140), the chief port and residence of European merchants, with steamer-lines to Vancouver, San Francisco, Australia, India and to Europe by the Suez Canal. A railway runs to the capital, the industrial and commercial city of TOKYO (1100), on the same bay. OSAKA (480) and HYOGO (*Kobe*, 130), both open ports in the south, are outlets for the manufactures of KYOTO (300), the ancient capital and chief industrial town, where the manufacture of silk fabrics and art-work is centred. The foreign trade of HYOGO is extremely flourishing. A railway along the east coast connects those towns with YOKOHAMA. NIIGATA on the west coast is a treaty port accessible only in summer on account of heavy surf. The southernmost island *Kyushu* contains the open port of NAGASAKI, one of the best and most picturesque harbours in Japan. *Yezo* in the north has two important sea-ports, HAKODATE in the south and SAPPORO on the west.

KOREA, a small kingdom, occupies the peninsula between the Yellow Sea and the Sea of Japan, and has been nominally subject to China. Gin-seng, a root used as a drug, is a characteristic export. There are three treaty ports, of which CHEMULPO (also called *Jen-chuan*) is the chief, as it is the harbour of SEOUL (250), the capital.

CHAPTER XIX. THE COUNTRIES OF AFRICA.

Egypt—Resources. Towns. Suez Canal. *North Africa*. Morocco.
Tropical Africa. Sudan. Liberia. Congo State. *Temperate*
South Africa. Orange Free State. Transvaal Republic.

Africa is less open to commerce than any other continent. This arises from its unindented coast-line, with few harbours, from the **configuration** of the country—a vast table-land descending abruptly to the sea-shore—causing cataracts and rapids on all the great rivers (none of which, except the Nile, and Niger-Benue, is navigable from the sea for any distance), and from the extremely hot climate which prevails everywhere except in the south. The **inhabitants** belong to many races, and as a rule are uncivilised. On account of the absence of roads or railways, and the fact that cattle cannot live in some districts, internal traffic in Central Africa depends on negro carriers. The extremely cumbrous money system—cloth, brass wire, beads and cowrie shells—further increases the difficulty of trading. **Arabs** with camel caravans, or gangs of negroes, carry on most of the internal trade of northern and eastern Africa, but as **slaves** form the most valuable commodity their success means depopulation, and is fatal to the future value of Africa as a market for European manufactures.

EGYPT, in the north-east, is ruled by a *Khedive* nominally under the Turkish government, but controlled politically by the United Kingdom, while French influence is considerable in commercial matters.

Resources. The wide flat delta and narrow valley of the Nile support a dense population on account of the fertile soil left after the annual flooding of the river, which begins to rise in June, and reaches its highest point in October. Here **cotton, wheat, rice**, beans, lentils and sugar-cane are the chief objects of cultivation, and the land is watered by a system of irrigation canals. In 1890 a great dam or

barrage was completed across the Nile at CAIRO, by which the level of the river above may be raised 10 feet and the irrigation canals continuously supplied in the dry season. If the rainfall should be deficient on the mountains of Abyssinia to the south, the Nile fails to overflow and the Egyptian harvest is a failure, as the climate of the fertile valley and plain is hot and extremely dry. The only cultivated land of any importance away from the river is in the province of Fayum, where a system of artificial irrigation is possible. Much more can be done to increase the productions of the land by additional engineering works for irrigation. In every sense of the word the Nile makes Egypt. On both sides of the Nile valley stretch vast deserts with a few oases yielding dates, and peopled by nomad tribes. The chief exports of Egypt are cotton, beans and grain; the principal imports manufactured cotton and clothing: most of the trade is with the United Kingdom, France and Turkey. The unit of coinage is the piastre, worth $2\frac{1}{2}d.$, 100 of which form the "Pound Egyptian" equivalent to £1. 0s. 6d. There is a network of railways over Lower Egypt, and a line runs up the Nile valley to ASSIUT.

Towns of Egypt. ALEXANDRIA (210), at the west end of the delta, is the chief trade port and has fine docks; ROSETTA and DAMIETTA are harbours at the mouths of other branches of the Nile, and all three are connected by rail and river with CAIRO (370) at the head of the delta, which is the capital and chief commercial city.

Suez Canal. PORT SAID at the east end of the delta is the Mediterranean terminus of the Suez Canal, which is 87 miles long, including 21 miles of lakes, and crosses the isthmus to SUEZ on the Red Sea. It is a wide straight cut, without locks, and can be traversed by the largest vessels afloat; traffic is kept up at night by means of the electric light. The Canal is managed by a French company and is an international highway between Europe and the far east; but in 1892 more than 2,500 British vessels, with a tonnage of over 8 million, passed through out of a total of 3,500 vessels of all nations, with a gross tonnage of 11 million.

North Africa. The northern part of Africa consists of the great Sahara sand desert, bordered on the Mediterranean by the Turkish dependency Tripoli and the fertile Barbary States, Tunis and Algeria, under French control, and Morocco in the west. The despotic empire of MOROCCO contains FEZ (140), manufacturing leather

and cloth caps. MOROCCO, the capital, has caravan communication eastward through TAFILET, on a date-growing oasis, and southward to Timbuktu in the French sphere on the Niger; the intervening country yields slaves, ivory, gold-dust, ostrich feathers and dates. The chief ports are TANGIER, opposite Gibraltar, and MOGADOR, on the Atlantic coast, west of MOROCCO. The chief exports are **beans, barley, wool**, and dried fruit. The country is rich in minerals, but these have never been utilised.

Tropical Africa. A number of populous Moham-
medan Negro kingdoms occupy the fertile region of the **Sudan** east of Lake Chad and south of the Sahara. It would be greatly to the profit of European merchants if they could trade with these countries but the people will have nothing to do with white men, and all attempts to open the Sudan to trade have hitherto failed. The **east coast** of Africa has already been described, as it is occupied entirely by the possessions of European countries. The **west coast** also is occupied by a string of British, French, Portuguese, and German colonies, which have been referred to before, but here there are two independent states under civilised government. The republic of **LIBERIA**, between Sierra Leone and the Gold Coast, with its capital **MONROVIA**, was founded by liberated American slaves. Its exports, like those of all West Africa, are palm-oil, earth-nuts, india-rubber, coffee and ivory. The **CONGO STATE**, ruled by the King of the Belgians, extends from the mouth of the Congo over nearly the whole basin of that river, reaching Lake Tanganyika in the east. The slave trade is prohibited in this region. The Congo is navigable from the sea to **VIVI**, whence a railway 250 miles long is being made to **LEOPOLDVILLE** on Stanley Pool above the cataracts. From this point the river is navigated by steamers for 1000 miles to Stanley Falls, and many of the tributaries can be ascended for hundreds of miles. Much ivory and india-rubber come down the river, these forming the chief exports.

Temperate South Africa contains two republics governed by Dutch-speaking Boers, but with a large British population and entirely surrounded by British territory and crossed by British railways.

The **ORANGE FREE STATE**, a small republic founded by the Boers, north of the Orange river, *exports* wool, hides, diamonds and ostrich feathers, and *imports* British manufactures, all passing through Cape Colony or Natal. The railways from Port Elizabeth and East London in Cape Colony meet north of the Orange river, whence a line was constructed by the Cape Government through BLOEMFONTEIN, the capital, north-eastward to the Vaal river, which bounds the Free State on the north. The Cape line through Kimberley to Mafeking skirts the western frontier, and from it a line is planned eastward through BLOEMFONTEIN to join the Natal railway at HARRISMITH.

North of the Vaal the Transvaal or **SOUTH AFRICAN REPUBLIC**, also founded and governed by the Boers, extends northward to the Limpopo river. It adjoins the Portuguese coast strip containing *Delagoa Bay*, from which a railway runs into the Republic, serving as an outlet from the gold-mining centre of BARBERTON to the sea. This line is being extended inland toward PRETORIA, and northward from the frontier toward SILATI. The Cape Government line crossing the Vaal from the Free State, has been extended north to PRETORIA, the capital, sending a branch to JOHANNESBERG. The South African Republic is prosperous on account of its immense gold-fields, the recent development of which has changed the whole commercial geography of South Africa. The value of the gold produced, mainly in the Witwatersrand district about JOHANNESBERG and near BARBERTON and SILATI, amounted to less than 1 million pounds sterling in 1889, to nearly 3 million in 1891 and to over 4½ million in 1892.

Resources. The mining of gold has become by far the most important industry in the republic. Wheat of

high quality is the principal agricultural product; cotton, sugar and coffee also grow, but agriculture is, as yet, neglected. **Wool** is largely exported, and the farmers keep not only sheep but large numbers of cattle and ostriches. There are coal-mines, though as yet little worked. English and Dutch are spoken in both these republics, and British weights, measures and coinage are employed. The English-speaking population is very rapidly increasing.

CHAPTER XX. THE COUNTRIES OF AMERICA.

Mexico—Resources, Towns, Coinage. *Central America*—Guatemala. Salvador. Honduras. Nicaragua. Costa Rica. *West Indies*—Hayti, San Domingo. *South America*—Configuration and Climate. Venezuela. Brazil, resources, towns. Paraguay. Uruguay. The Argentine Republic. Chile. Peru. Bolivia. Ecuador. Colombia.

THE great settlements of the Anglo-Saxon race in North America have been described; the remaining countries are very different in their degree of development. They are all republics with admirable constitutions on paper, but in few is there any political stability or real enterprise in industry or commerce. The people are either of Spanish or Portuguese descent or half-breeds with native “Indians” or negroes, although many emigrants from Italy and France and some from northern Europe have made their home in the continent. Financially all the states are in a strained condition, many of them burdened with debts that they are never likely to pay.

MEXICO.

The republic of **Mexico** occupies a high plateau in the south of North America. Population is densest in the south, which has a cool climate, due to altitude, and alternate dry and wet seasons. The land slopes down through a temperate belt to hot coast strips bordering the Gulf of Mexico on the east and the Gulf of California and Pacific Ocean on the west.

Resources. The chief resources are mineral; and the precious metals, especially **silver**, form more than two-thirds of the total exports. The products of the forest include **mahogany** and many valuable dye-woods, gums and spices. The plants of temperate countries, including **maize** (the chief food of the people), barley, **wheat** and beans, are cultivated on the table-land; on the hot slopes and coast strips sugar-cane, coffee, cocoa, cotton and tobacco are grown. The **agave**, or American aloe, is a characteristic cultivated plant, one species yielding an alcoholic liquor, and others, grown mainly in Yucatan, fibres which form an important export under the names of *henequen* and *sisal hemp*. **Cattle** are reared on the ranches in the north and usually driven across the border into the United States for sale. **Industries** are developing, but most manufactured articles are still imported. The chief trade is with the United States, the United Kingdom, and France. The chief exports are, in order, silver and its ores, henequen fibre, lead, and coffee. The import duties are very heavy, often exceeding the value of the goods on which they are levied.

Towns. MEXICO (320), the chief town and capital, situated on the plateau near rich silver-mines, has railways to VERA CRUZ, on the Gulf of Mexico, the chief sea-port of the country, and to most of the larger towns; the lines extend northward to the United States. A ship railway across the **Isthmus of Tehuantepec** is in progress, by which it should be possible to transport large vessels between the Atlantic and Pacific.

Coinage. In Mexico and most of the Spanish-speaking republics the unit of coinage is the silver dollar or *peso* (known in some of the states by different names), nominally worth 4s., but really about 3s. The metric system is legal, but the old Spanish **weights**, the *libra* (a little over 1 lb.), the *arroba* ($25\frac{1}{3}$ lbs.) and *quintal* ($101\frac{1}{2}$ lbs.), are largely used.

Central America and West Indies.

Central America, a mountainous isthmus, separating the Caribbean Sea from the Pacific, narrows and becomes lower at its junction with South America. A line of active volcanoes runs through it, and continues southward along the Andes. **Earthquakes** are so common everywhere on the Pacific coast as to affect commercial relations, towns being sometimes destroyed and harbour works either entirely submerged or raised high and dry. The resources have not been developed, and as the political condition of the small Spanish-speaking republics is uncertain and revolutions frequent, their trade is of little importance: most of it is with the United Kingdom.

GUATEMALA adjoins Mexico and British Honduras; **SALVADOR** and **HONDURAS**, the latter with the sea-port of **TRUXILLO** on the Caribbean Sea, lie to the south-east; **NICARAGUA**, containing a large lake, comes next and will acquire great importance if the scheme of deepening the San Juan river which flows from the lake into the Atlantic is carried out and a ship-canal is cut between the lake and the Pacific. **COSTA RICA**, with its harbour **PONTARENAS** on the Pacific, meets the district of Panama belonging to Colombia in South America. All these republics export **coffee, hides, sugar and fruit**; Honduras and Nicaragua also produce **mahogany** and **india-rubber**; **indigo** is cultivated for export in San Salvador.

The **West Indies**, belonging mainly to the United Kingdom, Spain, France and Denmark, mark off the Caribbean Sea from the Atlantic, and these have been already treated. The central island contains two republics, **HAYTI**, peopled by French-speaking negroes, with the fine harbour of **PORT-AU-PRINCE** to the west, and **SANTO DOMINGO** (*Dominica*) to the east. The products are **coffee, cocoa, sugar, mahogany, logwood and cotton**, and the trade is principally with the United States and the United Kingdom. Both republics are far behind in the development of their resources.

South America.

Configuration and Climate. The chain of the Andes, running from north to south close along the western coast, presents a steep front to the Pacific and a short steep slope eastward, succeeded by a long gradual slope toward the Atlantic. The Atlantic slope is divided, by the plateau of Guiana in the north and the mountains of Brazil in the east, into the basins of three great river systems, the *Orinoco, Amazon*, and streams entering the *La Plata* estuary. The **climate** is more oceanic than that of any other continent. In the north the south-east trades deluge the wooded Amazon plains with rain, but the Andes entirely protect the western slope, producing a region of rainless *deserts*. In the south the "roaring forties" cause a heavy rainfall on the western slopes, and the

wind is nearly dry when crossing the grassy plains of the east, which only receive slight showers.

The republic of **VENEZUELA** in the north-east includes the great river Orinoco, and its grassy steppe-like plains (*llanos*), devoted to **cattle-raising**. It is bounded on the east by British Guiana. Its mineral resources, although considerable, are little utilised. **Agriculture** is the only important industry; **coffee, sugar, maize and cocoa** being cultivated. The chief exports are coffee, cocoa, gold, hides, and copper ore, and most trade is done with the United Kingdom for imports, the United States for exports, Germany and France. **CARACAS** (70), the capital, is the chief market for **cocoa**, which is shipped at its harbour of **LA GUAYRA**, connected by rail, on the Caribbean Sea. **VALENCIA**, the second town in importance, is a **coffee** centre and has a sea outlet at **PUERTO CABELLO**. **MARECAIBO** on a deep bay in the west and **CIUDAD BOLIVAR** (*Angostura*) on the Orinoco are commercial harbours.

BRAZIL.

The United States of Brazil, contain about half the area and one-third of the population of South America. It was the last country in America to uphold slavery, which was abolished in 1888, and the latest to become a republic.

Railways run inland from the chief sea-ports, but transport in the interior is by mule caravans. A telegraph cable connects **BAHIA** with Lisbon, and most of the chief towns are joined by wires. The unit of **coinage** is the silver *milreis*, worth about 2s., but the money in use is almost exclusively a depreciated paper currency, together with nickel and bronze coins of small denominations. The official **language** is Portuguese, while that of all the other Central and South American republics is Spanish, but there are settlements of Germans and Italians, speaking their own languages, in the southern provinces, which are temperate. Export as well as import **duties** (the latter averaging 45 per cent. *ad valorem* on British goods) are charged on most commodities.

Resources. The characteristic but not the most profitable mineral of Brazil is the **diamond**, mined at **DIAMANTINA** in the province of *Minas Geraes*; **gold** is obtained at **OURO PRETO** in the same province; iron

and other metals lie ready to be worked. Successful **coal-mines** have been opened in the southern cattle-rearing provinces of *Rio Grande do Sul* and *Santa Catharina*. The dense tropical **forests** of the *selvas* covering the vast plain of the Amazon yield woods in great variety, **india-rubber**, gums, resins, wild fruits, drugs and spices, but they are not adequately utilised. Brazil is mainly a land of **plantations**, which are cultivated by a large negro and half-breed population. **Coffee** is the staple production, reaching a maximum in the eastern provinces; the quality is not the very best, but the quantity is equal to that raised in all other parts of the world. The **sugar-cane**, **tobacco**, **cotton**, and manioc are extensively grown, and **Paraguay tea** is also prepared. Attempts have been made with some success to introduce ordinary tea from China. The principal export (worth three-quarters of the whole) is **coffee**, then come **sugar**, **india-rubber**, **tobacco** and **cotton**. The United Kingdom and the United States each take one-third of the exports; while the former sends nearly half of the imports (manufactured cotton, iron and coal). Recent political disturbances have thrown Brazil back in production and commerce.

Towns of Brazil. RIO DE JANEIRO (800), the capital, on a fine bay, is the first commercial and manufacturing town in South America and the chief export-harbour for coffee. Railways run to OURO PRETO and other mining towns in the adjacent province of *Minas Geraes*, and to SAO PAULO, the railway centre of a large coffee-growing district, the produce being shipped at SANTOS. In the south PORTO ALLEGRO and PELOTAS, with railways to the German settlements, export cattle, tallow and hides. BAHIA (*Sao Salvador*, 80) exports cotton, coffee, sugar and rum. PERNAMBUCO (*Recife*, 190) has similar trade, and both are calling places for the regular steamers from Europe—especially Continental ports—to the capital. PARA, at the mouth of the Amazon on the equator, is the only good harbour on the swampy north coast, and exports the india-rubber and other forest-produce collected by the river steamers which navigate the Amazon.

The little inland republic of **PARAGUAY**, capital ASUNCION on the navigable Parana, is slowly recovering from the effects of long wars with the surrounding countries. Its chief export is the **yerba maté** or *Paraguay tea*, the

powdered leaves of a shrub, an infusion of which is drunk in all parts of South America.

URUGUAY is small, but well situated for commerce, lying between the Argentine Republic, Brazil, and the La Plata estuary, which although shallow and full of shifting sandbanks is of vast commercial importance. **Cattle** and **sheep** breeding is the main industry, and the *exports* of live-stock, fresh meat, meat extract, tallow, hides, wool and bones, are sent chiefly to the United Kingdom, France, Brazil and Belgium; while the imports are mainly brought from the United Kingdom, France, and Italy. **MONTEVIDEO** (190) on the Plate, with a railway to the interior, does the whole external trade of the country and has immense ranges of slaughter-houses (*saladeros*). **FRAY BENTOS** on the Rio Uruguay is the seat of *Liebig's meat-extract works*, where over 1000 cattle are slaughtered daily in the summer season (from December to June).

The **ARGENTINE REPUBLIC** occupies the whole of the southern extremity of South America from the Atlantic to the Andes, including the vast treeless plains or *pampas* of the Parana and the shingle-deserts of Patagonia.

The main **resources** are the rich pasture lands which support millions of half-wild **cattle** and **horses** under the charge of herdsmen known as *gauchos*, who are famous for their horsemanship and their skill in capturing the beasts with the lasso. In the number of **sheep** it is only rivalled by Australia. **Agriculture** is extending, especially in the north-east, where large areas are tilled for maize, wheat and flax. The principal *exports* are hides, meat, and other animal products (including **wool** sent almost exclusively to the continent of Europe and United States), maize, wheat and flax; the chief *imports* are textile fabrics, articles of food and drink, and manufactures of iron and other metals. The United Kingdom, Germany and France send most of the imports; France, the United Kingdom, Belgium and Germany receive the greater part of the exports. The Argentine Republic is being rapidly developed; it attracts many emigrants from southern Europe, especially Italians, and there are large Jewish settlements. Its **railway** system is extensive, lines radiating from **BUENOS AYRES** in all directions; one runs north-west to the borders of Bolivia, and another right across the continent,

affording communication by a tunnel under a pass in the Andes with Valparaiso on the Pacific, but it is not yet completed.

BUENOS AYRES (550) contains more than 150,000 foreigners engaged in trade, it has enormous slaughter-houses and is the most active commercial town on the La Plata estuary with nearly the whole export and import trade of the country. Its harbour is being improved, but much of its shipping trade is still done at **LA PLATA**. **ROSARIO** and **CORDOBA**, stations on the North-Western railway, are important commercial towns.

CHILE (*Chili*), on the Pacific slope of the Andes, although rarely exceeding 100 miles in breadth, runs along the entire southern half of the continent, having annexed by conquest large portions of the adjacent republics.

Nitrate of soda and **guano** are mined in the rainless deserts and islands of the north and shipped at **IQUIQUE** and **PISAGUA** in *Tarapaca*. There are **silver** mines south of this region around **COPIAPO** with railways to the little harbour of **CALDERA**. **Copper** is abundant in the central provinces just north of **VALPARAISO**. **Coal** is worked further south and shipped at **CORONEL** and **LOTA**. The extreme south has a wet, inclement climate, but the middle portion is singularly fertile, growing **vines**, **wheat**, and **sugar-cane**. Nearly nine-tenths of the value of the *exports* are made up by **minerals**, chiefly nitrate of soda (*Chile saltpetre*), copper, silver, and coal; then follow animal products and wheat. More than two-thirds of the external trade is with the United Kingdom; Germany and France coming next. The **people** of Chile are enterprising and rapidly developing their resources; the **government** is firmer and more settled than that of most South American republics. There are numerous **railways**, chiefly short lines branching inland up the mountains from the sea-ports; the trans-continental line from **VALPARAISO** to the Argentine Republic, not yet opened, and that along the coast southward to the coal districts of *Concepcion*, are among the most important.

SANTIAGO (250), the capital, and its port **VALPARAISO** (150), are the chief towns; the latter is the busiest harbour on the west coast and receives all the imports, but **IQUIQUE** and **PISAGUA** send out most of the exports. **VALDIVIA** in the south contains a great many German settlers.

PERU, north of Chile, is of less commercial importance on account of long and unsuccessful wars, revolutions, and bad government. Its chief productions are **silver** and **gold** in the high mountain plateaus; **guano** is nearly worked out and the nitrate-producing province of *Tarapaca* now belongs to Chile. **Petroleum** is worked for home use, and sugar, cotton, coffee, tobacco and maize are raised chiefly by Chinese labour on the borders of the short Pacific streams; cocoa, **cinchona** (Peruvian bark) and other forest produce are collected in the great woods of the eastern slope of the Andes. The chief exports are now sugar, silver, cotton and wool. The **llama**, typical of the Andes countries, and the **mule** are the common beasts of burden; sheep and alpacas are kept for their wool. **LIMA** (100) is the capital and trade centre, with one railway to its port **CALLAO**, and another up the Andes intended to reach **OROYA**, and the silver mines of **CERRO DE PASCO**, 14,000 feet above the sea, the highest town in the world. From the southern port of **MOLLENDO** a second "railway in the clouds" crosses a pass 15,000 feet high to **PUNO**, near the great plateau-lake *Titicaca*, and is intended to run down the valley of one of the tributaries of the Amazon to the town of **CUZCO**.

BOLIVIA, on the widest part of the high Andes plateau, is entirely shut off from the sea, and its resources are very slightly developed. Most of its external trade passes by llama and mule caravans to the port of Arica in Chile, some by rail from Lake Titicaca to Mollendo, and a considerable amount by the Argentine North-Western railway to Buenos Ayres. The chief towns are **LA PAZ** with a railway westward to Lake Titicaca and **SUCRE** (the capital) farther south. The western mountainous region contains the famous silver mines of **Potosi** and **HUANCHACA**, which are connected by rail through **ORURO** with the Chilean seaport of Antofagasta. The eastern slope, watered by tributaries of the Amazon, yields cinchona, the stimulat-

ing coca leaves, and india-rubber, all in inexhaustible quantity.

ECUADOR lies north of Peru and has similar resources. The chief industry is **cocoa**-culture, and the *exports* of cocoa amount to eight-tenths of the whole; india-rubber, hides, coffee and vegetable ivory making up the rest. **QUITO**, the capital, being situated at an elevation of over 9000 feet, has a mild and pleasant climate although nearly on the equator. The only port is **GUAYAQUIL**, a fine harbour on the Pacific, trading chiefly with the United Kingdom and France, but the trade of the country is paralysed on account of the want of roads.

COLOMBIA occupies the north-western corner of South America, including the isthmus of Panama. **Coffee** is the main export, while cinchona, tobacco and vegetable ivory are of some importance. Its commercial and political value depends on the traffic across the isthmus between **COLON** (*Aspinwall*) on the Atlantic and the Pacific harbour of **PANAMA**. A busy **railway** 47 miles long connects these ports, but the ship-canal works have been abandoned. **BOGOTA** (120), the capital, stands high up in the Eastern Cordillera, but the chief commercial town, **BARANQUILLA** on the Magdalena, is 20 miles by rail from **PORT COLUMBIA**, its harbour on the Caribbean Sea.



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